Gleanings in Bee Culture

February, 1948 Vol. 76, No. 2

Producing Package Bees and Queens

By R. C. Daniels

A queen mating yard with "nucs" under trees for partial shade.

Years ago as a honey producer near the Canadian border I would dream of bee breeding in the deep South where bees might gather pollen and nectar over a longer period of the year. The idea of producing large quantities of bees and queens fascinated me. Then too, through handling many thousands of packages from all parts of the South over a period of years, I had ideas of how they ought and ought not to be produced and shipped. Having no first hand information, many of these ideas were false, but in any event, as a honey producer I knew what kind of bees and service was desirable.

A turn of events, not in any way planned, brought me to the South something over ten years ago. It was natural that I should drift to the breeding of bees, the first months as a pastime and then as a business. It did not then take long to appreciate the effort, skill, and equipment

Entered as second class mail matter at Post Office at Medina, Ohio. Published monthly. Subscription price:—1 year, $2.00; 2 years, $3.00; 3 years, $4.00. Foreign 25c additional.

XUM

Swarm box showing bars of grafted cells covered with bees.

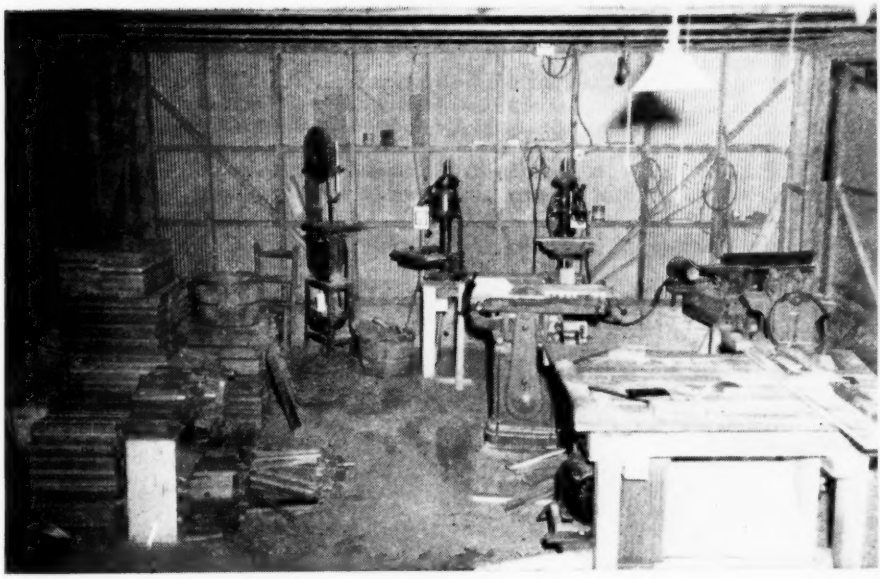
necessary for shippers to get their orders to customers on schedule. I shall try to give some idea of the problems and organization necessary for the breeding and shipping of queens and bees.

The first and most important requisite is skilled employees. When one considers that package bees and queens must be produced in good or bad weather it is easy to understand the amount of skill and experience required, which includes an understanding of bee behavior under most all conditions. In the case of queens it takes at the best 24 days from the time the larva is grafted until the mated queen is ready to cage and in 24 days' time there is a lot of good weather and always some bad. Taking into consideration that the earliest steady production of queens starts April first and that under normal conditions the main bee shipping season ends May 20th, it can be understood that the operators must thoroughly understand their trade to keep quality and quantity production coming every day, as the slightest misjudgment will impair the service. The operators can maintain this steady production under most all conditions.

There are, however, seasons when the elements combine to make the weather so bad that it is impossible to stave off slowdowns or stops in production. An incident comes to mind of the past season when we had grafted from early February until October, never missing a scheduled graft with the exception of September 19th, the day of the hurricane when the wind was blowing at an excess of 100 miles per hour at the exact grafting time, 1 p.m. It looked as if the graft would have to be missed. However, it could have been made easily had not the electric lines been blown down. Auxiliary facilities were on hand, but to end the story, it was decided to waive making the graft because it would not affect the shipment of any scheduled order and some of our employees suffered roof damage to their homes which needed immediate repair.

From January 15th to April 1st is the most trying time for a breeder. During good weather a light honey flow is possible after March 1st, but not probable before March 15th. After April 1st good weather, with the exception of a day or two occasionally can generally be counted upon. Therefore, before the honey flow is available the bees must thrive on stored honey and sugar. The sugar of course is a weapon against the weather as a stimulant, and whenever stored honey is not available, sugar is necessary to feed the colonies.

In early March the first queen cells start coming off and by March 15th a full quota of cells are available. It is then that hundreds of



Interior of workshop where bee shipping cages are made and assembled.

pounds of bulk bees are needed to stock the nuclei. The securing of these bees this early is quite a problem insomuch as the bee-producing colonies are not ready for full production at this early date, and the bee-producing colonies must be shook extremely lightly so as not to impair their building up to production strength by April 1st. The necessity of this light shaking makes it necessary to shake from a large number of colonies to secure the great number of bees required to stock the nuclei. If it is done just right the colonies are only slightly retarded and will come into production in time for April 1st shipping. Once the cell builders are in production they must be so manipulated that they will always remain in a state just short of peak condition. A cell builder at a peak is all right today but tomorrow will be trying to swarm, or trying to concentrate on gathering a large crop of honey, or being just plain lazy. In other words, just before a peak they are as strong as possible and still are able and concentrating on brood rearing. In such a condition they are able and willing to draw queen cells of the best quality if properly induced.

In the nuclei yards small nuclei are used for economy. There are many reasons for using small nuclei, several being that they take less bees, less feed, and are more quickly manipulated. Because a nucleus is a small colony of bees is no reason for it to be inferior. It must be so managed that it functions under perfect morale. One might say that it must contain the same hive morale that is required in a cell-building colony. The area of the nuclei hives must be such that they can maintain a reasonable hive temperature. They must be inspected periodically and bees added, if necessary, in just the right quantity. Since in this small area they raise relatively small amounts of brood, it will be necessary to add bees at intervals. Regular feeding is necessary for stimulation and to maintain the nuclei insomuch as they cannot be counted on at all times to gather sufficient nectar for their use. And if too many bees are in the nuclei they will follow the natural course to swarm. In the mating nucleus we have a very small colony of bees which perhaps could not fend for itself and if left alone perhaps could never build up to a normal hive of bees and it would soon lose morale and give up. But keep the bee strength just right, supply just the right amount of stimulative feeding at the right time so that examina-

B & Z Library

tion will at all times show them with a healthy vigorous condition in the same morale as a cell builder. Normally two weeks after the nucleus is established with a cell the queen will have mated and have been laying several days. Then the simplest part of the process remains.

The quality of the queen (not the breeding) is judged by the placement of her eggs in the cell, size of thorax, and shapes of abdomen. Untested queens are always caged at this stage and a skilled operator will nearly always detect a drone layer even though she quite often looks and acts like a perfectly functioning mated queen. There are a few drone layers that get by in caging. However, when working the nuclei in two weeks the exact number is evident. Over a period of years the percentage of drone layers caged has proved to be only a small fraction of one percent.

Contrary to popular opinion, high production of queens is not a general sign of poor quality, but on the contrary is a sign of good quality (not breeding). As an example, let's say that one establishes 100 nuclei giving them 100 cells, and two weeks later secures 90 queens that pass rigid inspection. This is conclusive evidence that conditions had to be near perfect in all respects. Now, let's say that instead of 90 only 30 or 40 were taken. This can generally be accepted as evidence that some condition was wrong and there is the possibility that that same condition may affect the vitality of those 40 queens.

I have heard expert beemen state that if they had to take their choice between queens of excellent strain selection or proper rearing, it would be necessary to choose those that had been properly reared. Of course, in modern honey production the producer must expect at least one crop of honey from an introduced queen, and if she were underdeveloped she would not be able to produce to a maximum no matter how excellent the selection of the strain.

We now consider the selection of good breeding stock. There are two main problems to be considered. First, one cannot line breed indefinitely. Were line breeding practical it would simplify the problem greatly as one could just go on year after year selecting the best queens of his strain or better stock, confident that his strain was holding its own, if not slightly improving. But unhappily this is not the case. I have always been of the opinion that too close line breeding, which is really inbreeding, should not be followed. In the wild state there is bound to be considerable inbreeding, but also continuously some cross breeding. For example, we have a woodland in which there are a number of bee trees. There naturally the virgin queen makes an attempt to mate with drones some distance from her own hive. This, of course, would be the line breeding side of it. However, swarms are known to migrate a considerable distance and therefore you would have a high percentage of line breeding, but also some gradual cross breeding. Then as further evidence we have a great stock of knowledge to the effect that in other livestock close breeding must be handled with care or depreciation will take place. Of recent date some investigations in research have proved that inbreeding can definitely cause degeneracy. Therefore, it must be concluded that in the selection of breeding stock one cannot continue indefinitely to merely select the best of his strain, but from time to time must secure and test similar stock of a different strain with the view of introducing new blood for the purpose of preventing degeneracy, and wherever possible, securing improvement.

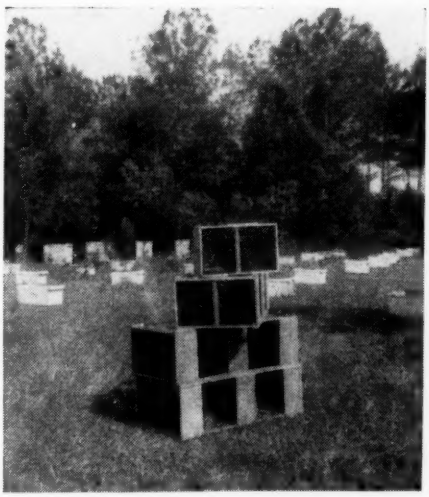
The second chief difficulty is the immense amount of work connected with properly selecting breeding stock. It is pure folly to go into a bee yard and on the spot select the queen of the best hive of bees in the yard as a breeder, without knowledge of her performance or age. I have managed a few hives of bees in the North where their production exceeded 800 pounds surplus (these of course were a few among hundreds of hives). We know that colonies of this size attract lost bees, and if they are lost they are invariably attracted to the strongest hives. I determined, upon observing the last colony with this quantity of honey, to find out as much as possible concerning the queen. This hive showed up in the northern sweet clover area with a great deal more honey than any other hive in the

yard with the first flow about July 1st. An examination showed a young queen, undoubtedly reared that spring, heading the colony and to her credit she did have half again as much brood as any other colony, so it was evident that this hive, which was located about the middle of the row, was raising a tremendous number of bees even though they were receiving a considerable amount of drifted bees. This hive was left under close observation and did carry a heavy amount of brood until fall and totaled over 800 pounds of honey, whereas the yard average was 160. It was impossible further to keep this hive under observation.

It has been tried many times by different people to get like results in breeding from such a queen, and the offspring generally proved to be doubtful improvement. To take full advantage of such a queen one must know her age and her breeding and that and that only would give the clue to improvement. Then, too, her sister queens, if also under observation, would give further understanding of the situation. In such a case there is always a very great possibility that she would actually come under the classification of a freak. I remember with much satisfaction one of a number of queens kept track of over a period of three years in a sweet clover producing area of the North. This particular queen happened to be a Caucasian bought in the first half of May in a package of bees. Without extra attention she built up her colony, stored the average crop of honey gathered by other colonies in yards that season. The next spring a division was made from her, plus sufficient bees to strengthen a weak hive. She brought her colony to a peak and again stored average production. The third spring she furnished bees to strengthen a weak hive, and built up to a peak around July 1st, and then disappeared. The colony never received extra attention at any season of the year and she had all the good characteristics during the seasons of the year. Her breeding record was available and the only thing we would have liked to have known further is whether she was lost through accident or injury or just failed.

In judging for breeder stock it is first necessary to have a system for marking the queens so that always beyond the shadow of a doubt it is the exact queen recorded. I like to put out several hundred marked queens scattered through as many yards as possible and then as the hives are worked at intervals observation can be made at all seasons as to the good or bad points of the various lines. Whenever any particular yard is having a difficult time in maintaining themselves, weaknesses are likely to show up. A queen to be used as a breeder should have proved her qualities two years in the North and at least one year in the South. If you have ever tried to keep a record on only two or three queens over a period of two or three years, it is easy to understand the great amount of work and attention required to keep up with a hundred or two. For commercial breeding purposes one must have a good number of selected queens for breeding purposes, for when you start to use them as breeders there is a possibility of mechanical injury since one is in the hives very often getting out grafting material. Unlucky indeed is the fellow with one breeder queen. Some accident will always overtake her before he can secure the desired number of grafts.

Picayune, Miss.



Packages crated and ready for shipment to northern beekeepers.

We Visit England and Scotland

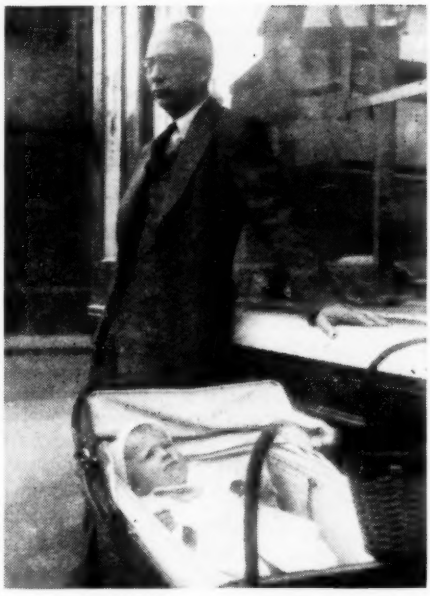
By John G. Jessup

[Mr. Jessup, a commercial beekeeper of Iowa, and his wife take time out to visit their married daughter in England and to see their new grandchild. We asked John to keep his camera and notebook handy on the trip.—Ed.]

Just being a beekeeper turned out to be a wonderful passport for us in England last October. There are few commercial producers. Although a small number have a thousand colonies, most of them are hobbyists with less than a dozen colonies. The Cambridge Association has over 500 members and 50 colonies is the largest number owned by any one. The secretary of the Edinburgh Association of several hundred members was the manager of a large printing and lithographing firm. He had six colonies of bees, but had all afternoon and evening to talk beekeeping with me.

The severest winter in 100 years followed a fall when bees in Scotland went into winter very light in stores. The result was a very heavy winter loss. With no package bees available it will take time to make up the loss and get back to normal

The demand for honey far exceeds the supply, most of the crop being sold direct to the consumer by the producer at ceiling prices which are 70c per pound for heather and 55c for clover. In fact, I was unable to find a pound of heather honey to bring home. We did not have time to get up to the Highlands where it is produced or we would have had



John and his English granddaughter.

The house of an English gentleman who keeps four colonies in his garden.

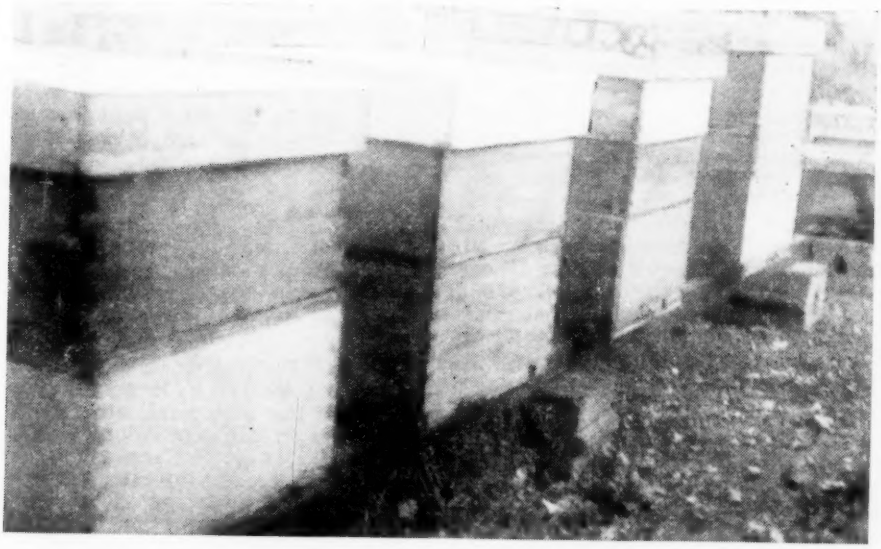
Feeding the pigeons in Trafalgar Square.

some of that honey which is so thick it has to be pressed out of the combs. Little honey seems to be imported as there is such an unfavorable balance of imports over exports. The ceiling retail price in London on honey imported from Australia is 31c per pound. As a result of this there is none available. Imports from the U.S. are prohibited as there are no dollars available at present.

The food shortage and high prices have been a great stimulation to beekeeping and no doubt account for the large membership of the associations. Supplies are very short, with lumber the main bottleneck, and the import of U.S. supplies is prohibited by Government order because of the dollar shortage. There are many Dadant and Langstroth hives but the Standard British hive is the most numerous. The British hive holds 10 frames with a 17-inch top bar and with inside measurements of 13 ½ x 7 ¾ inches. This is smaller than the Langstroth but they seem to find them quite satisfactory.

The bees over there build combs that look just like ours. Their stings are no different, and the crops produced are about the same, this year ranging from nothing in some sections to 200 pounds in favored locations. One feels right at home standing in their honey houses with the familiar smells, the extractors, uncapping cans, settling and heating tanks. England doesn't seem nearly so far away now that we have been there.

Perry, Iowa.



Standard British hives in the apiary of D. Moore, Histon, Cambs., England.

Nosema Losses in Package Bees as Related to Queen Supersedure and Honey Yields*

C. L. Farrar, U.S.D.A., Agricultural Research Administration, Bureau of Entomology and Plant Quarantine†

[Reprint from "Journal of Economic Entomology" for June, 1947]

Beekeepers in the North depend on package bees from the South to increase their number of colonies or to replace winter losses. A few prefer to restock apiaries with package bees rather than attempt to overwinter colonies. Each year there are thousands of new beekeepers who use package bees to start colonies. In 1945 there were 479,085 packages (1.25 million pounds of bees) and 874,600 queens shipped from the southern states and California. For several years the demand for bees and queens has exceeded the supply during April and May, the period when new colonies can be established most profitably.

The growth of the package bee industry during the last 25 years attests the importance of packages in modern beekeeping. The need for more bees to provide for the pollination of agricultural crops insures an expanding demand for some time to come. The productive performance of package colonies, however, has been extremely variable. In too many shipments there are heavy losses through queen supersedure, poor stock, or delayed delivery. Furthermore, the buyer often fails to provide adequate pollen and honey to support the brood rearing necessary for building large colonies.

Queen supersedure was recognized as a critical problem in the early development of the package bee industry, and in 1935 a Federal project on supersedure was started to investigate causes and remedial measures. Experiments were set up to test many theories that had been advanced by beekeepers. By 1938 the conclusion was drawn that quality of stock was a major factor in supersedure, since the loss of queens was proportionately lower among stock groups showing high productivity and higher among those showing low productivity, based upon honey yields obtained from the colonies headed by surviving sister queens (Farrar & Schaefer 1939).

*Richmond Program Paper.
†In cooperation with the Wisconsin Agricultural Experiment Station.

Dr. C. L. Farrar standing beside his scale colony near Madison, Wisconsin. Picture taken by Jack Deyell during July, 1947.

This was a fortunate conclusion even though it has since been proved erroneous. It focused attention on stock characteristics and the opportunity for improvement through selection and breeding. Some of the poorest queens tested have not been superseded, whereas not infrequently outstanding queens, judged by the quality and quantity of their brood, suddenly stopped laying and were lost.

In later Federal work Nosema disease was shown to be largely responsible for the abnormal supersedure of queens in package colonies (Farrar 1942; 1944). Even though a queen may escape infection, the development of the colony is retarded more or less in proportion to the degree of infection in the original package population. The purpose of

this paper is to summarize the evidence found against the protozoan **Nosema apis,** particularly as it relates to package bees.

Queen Losses Among Package Bees.—Most queen losses may be grouped into five categories: (1) Introduction losses, (2) abnormal and drone-laying queens, (3) abnormal supersedure of queens that lay normally, (4) accidental loss during hive manipulations, and (5) the normal supersedure of failing or worn-out queens. The abnormal supersedure is most serious and may extend through the first two months after the packages are established. Although the association between Nosema and the abnormal supersedure of queens was not established until 1941, the queen losses for the period 1938 to 1946 are recorded in Table 1.

The first queens examined for Nosema infection were removed from their colonies in June 1941. They had laid normally for about two months, but suddenly stopped laying, became sluggish, and most of their last eggs shriveled and failed to hatch. All were found to be heavily infected with Nosema. Previously many queens had been observed to manifest similar symptoms, but the superseded queens either were not found or they were not examined for Nosema. Since the spring of 1942 an effort has been made to recover as many superseded queens as possible and to associate colony symptoms where the queens were not found with those characteristic of supersedures where the queens were found infected. During the 9-year period approximately 18 percent of the queens used were superseded abnormally. Investigations of the problem since 1942 indicate that at least 88 percent of this loss can be attributed to the infection of the queen by the protozoan **Nosema apis.**

Nosema-Inoculated Queens. — In the course of these investigations, queens that were allowed to feed on sugar syrup containing five or six spores per microscopic field (400X) manifested symptoms identical to those exhibited by queens naturally infected prior to supersedure. The inoculated queens appeared to lay normally for a period of one to seven weeks. The infected queens then suddenly stopped laying, and many of the last eggs shrivelled and failed to hatch.

Occasionally a colony is unable to start queen cells because the last eggs fail to hatch and the larvae present in the colony are too old to be developed into queens. The infected queen becomes sluggish and may remain in the hive several days before death, or she may crawl out of the hive, as evidenced by her position to one side of or even back of the hive. When carried out by the bees, she usually is found in front within a distance of six feet. A sluggish queen, upon dissection shows a typical swollen milky-white ventriculus containing millions of Nosema spores when a smear is examined under the microscope.

On February 1, 1944, 13 queens were removed from colonies and allowed to feed on inoculated syrup for at least an hour. They were then supplied with uncontaminated syrup. Of five queens that were caged without attendants, four died on the 11th day and one was in a weakened condition. All five queens showed infection when smears of the ventriculus were examined. The eight other queens were provided with young attendant bees and were successfully introduced into colonies on February 18. One queen was superseded about February 25. The oth-

Table 1.—Queen losses due to abnormal supersedure 1938 to 1946.

Year	Number of Packages	Queens Lost First 2 Weeks	Second 2 Weeks	Second Month	Nosema Infected Queens	Queens Not Found, Probably Infected
1938	143	5	7	8	No observations	
1939	130	2	4	5	No observations	
1940	220	6	16	18	No observations	
1941	150	11	18	9	3	
1942	180	3	9	14	11	7
1943	167	11	9	11	14	12
1944	170	22	52	12	48	35
1945	190	7	3	3	7	3
1946	190	4	7	6	10	5
Total	1,540	71	125	86	93	62
1942-1946		47	80	46	90	62

ers laid for varying periods up to March 13, when they were examined and found infected. Three queens had a few scattered eggs and sealed cells but no larvae, in contrast to the active brood rearing in similar colonies headed by uninoculated queens. A normal queen that was substituted in one of the colonies on March 13 had 2.5 frames of normal brood 12 days later.

Early in August, 45 queens were removed from their colonies and caged individually on dry comb under push-in cages. One cell filled with the inoculated syrup was available for each queen. The unattended queens were returned to their colonies after they had been observed to feed on the syrup. Five packages of bees were sprayed with the inoculated syrup and the next day were installed in hives with young queens just starting to lay. One of the inoculated queens was lost through manipulation, but 33 of the other 49 in the two lots were superseded within 10 to 30 days, 13 were superseded within 31 to 46 days, and 3 escaped infection. The latter showed no spores when examined after nine weeks. The five queens added to the inoculated package bees became infected and were among those superseded within the first 30 days.

Nosema-Infected Attendant Bees in Queen Cages.—In 1945, 34 out of 39 queens from two commercial sources were accompanied by one or more infected attendant bees. In 1946, 41 out of 62 cages from commercial sources showed from one to five infected attendants, and one infected queen was found. Other miscellaneous shipments of queens have shown infected attendants, and an occasional queen dead on arrival has been found infected. However, other causes, particularly overheating, are more likely to be responsible for losses during the short period queens are in the mail.

In an attempt to reduce the danger of including infected attendant bees, queens from the Southern States Bee Culture Laboratory were provided with attendants taken from a colony that had been moved twice at two-day intervals to eliminate field bees. Only a single infected attendant was found in each of two cages out of 28 received. This is in decided contrast to findings among other shipments of queens from that laboratory when the precautions for eliminating field bees had not been taken.

Nosema in Southern Colonies and Nuclei.—Nosema appears to be as widespread in southern as in northern apiaries. Every shipment of package bees examined, regardless of originating state or source, has shown some Nosema infection when sampled upon arrival. The degree of infection among lots, even from the same source, has varied from negligible to 100 percent.

Eight apiaries in Mississippi, Louisiana, and Alabama were visited in March, 1945. Nosema-infected bees were found in small samples taken from 51 percent of 65 colonies and 65 percent of 123 nuclei. The colonies and nuclei were sampled at random, no effort being made to sample those in poor condition. In one queen mating yard all the samples taken from 11 nuclei started with package bees without brood showed infection, whereas only 7 out of 15 showed infection where a comb of sealed brood had been added. The presence of brood did not eliminate the infection, but it decreased the proportionate number of infected bees by the addition of young emerging bees.

Incidence of Nosema Among Packages.—Since 1942, samples of 10 to 15 live bees have been dipped from the cluster of each package upon arrival and examined in mass for Nosema infection. Since the samples represent only approximately 0.1 percent of the total number of bees in a package, a negative sample does not necessarily indicate the absence of infected bees in a package.

The 1945 and 1946 package populations were again sampled during the third week after introduction just prior to the emergence of the first young bees. To determine the percentage of infection in the colonies, from 10 to 40 individual bees were examined. The percentage of infected to noninfected bees varied greatly among the colonies, some showing 100 percent. The percentage of infected samples from packages on arrival, and from the colony populations, are given in Table 2.

Effect of Nosema on Brood Production.—When the area of sealed brood measured three weeks after introduction, was correlated with

Table 2. Nosema infection in package bees.

Year	Pkgs.	Infected Samples On Arrival	After 3 Wks.
	No.	%	%
1942	180	90	No observation
1943	167	52	No observation
1944	170	62	No observation
1945	190	30	90
1946	190	32	74

the percentage of Nosema infection during the third week, negative correlation coefficients of -0.31 and -0.42 were obtained, respectively, in 1945 and 1946 for approximately 190 colonies each year. These data indicate that the presence of Nosema had a depressing effect on brood rearing somewhat proportional to the percentage of Nosema infection among the worker bees. Colonies showing infection of 60 to 100 percent had an average of 100 to 125 square inches less brood than colonies showing 10 percent or less infection. Variations in the number and age of bees making up each package, as well as in the productivity of the queens, obviously lowered the association between measured brood and degree of infection.

Effect of Nosema on Honey Yields.—The honey yields from the package colonies varied with the degree of Nosema infection in the package populations three weeks after the packages were installed.

Colonies in the low - infection group that retained their original queens averaged 54 pounds more surplus honey in 1945 than those in the high infection group. They averaged 111 pounds more honey than the colonies in the high infection group that superseded or had their queens replaced. The queen losses in the high infection group were due largely to the queens themselves becoming infected.

No major honey flow developed in 1946; so the yields are given in gains or losses of honey above the reserve stores provided in the spring (190 packages averaged +0.9 lb.). One apiary location having the poorest honey flow was represented by 40 colonies in the low infection group while there were only 10 in the intermediate—and one in the high infection classes. Omitting the colonies of this yard, 38 colonies in the low infection group that retained their original queens produced 23 pounds more honey than 44 colonies in the high infection group, and 28 pounds more than colonies in the latter group that superseded or had their queens replaced.

Discussion.—Nosema disease is so widespread in both the North and the South that users of package bees must anticipate losses in queens and in productive efficiency of the colonies. Fundamental studies are urgently needed, both of the organism **Nosema apis** and of its parasitism in the honeybee.

The importance of Nosema in productive beekeeping has been overlooked because the organism seldom causes death of the colony. It reduces the length of the life of the individual bee or queen. Throughout the beekeeping industry the losses, measured by reduced production, attributable to Nosema may equal or exceed those caused by the better known brood diseases.

Beekeepers who use package bees can reduce their losses by maintaining reserve queens in nuclei for prompt replacement of those superseded. Package colonies must be provided with adequate honey and pollen reserves, since a rapid addition of young bees will decrease the percentage of infection within the colony. Adding combs of brood from strong overwintered colonies to packages should be helpful for the same reason. Colonies located in full sunlight suffer less from Nosema than do those in the shade. Sunlight stimulates the flight of bees, and those weakened by Nosema are less likely to return to the hive.

Producers of package bees and queens should adopt practices that will decrease the chances of queen infection while in the mating nuclei or during shipment. A greater ef-

(Continued on page 119)

Table 3.—Average honey yields of package bee colonies with different percentages of of Nosema infection three weeks after installation.

Year	Original Queen Pounds	Supersedure Replacement Queen Pounds	Original Queen Pounds	Supersedure Replacement Queen Pounds	Original Queen Pounds	Supersedure Replacement Queen Pounds
1945	267 (37)*	182 (25)	244 (50)	179 (50)	213 (12)	156 (13)
1946	9 (60)	—12 (20)	0 (33)	8 (10)	—2 (47)	—8 (14)
1946**	20 (38)	3 (5)	5 (24)	8 (9)	—3 (44)	—8 (14)

*Numbers in parentheses refer to number of colonies.
**1 yard omitted.

Research on Honeybees and Wild Pollinating Insects

Pollinating Insects Receive Increased Attention

[Taken from Report for 1947 of Chief of the Bureau of Entomology and Plant Quarantine, Agricultural Research Administration, Washington, D. C.]

Modern agricultural practices have made such inroads on native pollinating insects that corrective steps must be taken if high production is to be maintained in the large number of important insect-pollinated crops. The continuous and serious decline in the yield of legume seeds, in particular, is due in part to a deficiency of pollinating insects. Work on this problem was initiated during the year, with headquarters at Logan, Utah, where investigations are being made on insects effective in the pollination of western legumes, particularly alfalfa, and at Columbus, Ohio, where emphasis is being placed on the insect pollination of red clover in the Eastern States. The investigations will cover not only the value and the efficient utilization of the honeybee for this purpose, but also the biology, diseases, and methods of propogation of wild pollinating insects, especially the bumblebee and other wild bees.

In a study of the wild bee pollinators of alfalfa made in California, nests of two or three species of **Megachile,** which are among the most efficient pollinators of this crop, were found in the stalks of elderberry, star thistle, wild tobacco, milkthistle, and a few other hollow-stemmed plants. A nest was found in a cottonwood log. Nests of **M. brevis** (Say) (tentative determination) were most abundant in milkthistle. This species utilizes stems that have been cut or broken off in a way to expose the hollow cavity.

The number of honeybee visitors to neighboring alfalfa plots in northern Utah was in direct proportion to the amount of bloom. Profuse blossoming alone, however, does not guarantee a good crop of seed. In southern Idaho few bees were observed in the fields although there was a wealth of blossoms, for honeybees had been moved out of the locality the previous year.

Of the season's collection of pollen in a single hive in Arizona, approximately 10 pounds was alfalfa. To obtain this quantity it has been estimated that over 3.6 billion alfalfa blossoms were tripped by this one colony.

Artificially Inseminated Queen Bees Highly Resistant to Disease

For the first time only artificially inseminated queens were used in the studies on resistance to American foulbrood. Forty-six queens of two lines showed 91 percent and 13 queens of a third line gave 100 percent resistance. The queens used for one of the first two lines were mated with their brothers, whereas those of the other lines were mated with drones from other colonies of the line to which they belonged. A few queens representing a triple cross of these three lines were 100 percent resistant. In all cases resistance was higher than for the same lines last year. Less susceptibility to European foulbrood was also observed in 1946 than in the preceding year.

Of 590 queens artificially inseminated for the disease-resistance and stock-improvement studies, 62 percent started laying and 316 of these queens were sent to the laboratories in Wyoming and Wisconsin, where these studies are being made.

Sulfathiazole Retards American Foulbrood

Culture studies continued to indicate that when sulfathiazole is fed to colonies in sugar syrup or pollen cakes, it may retard the germination of American foulbrood spores ingested by the bee larvae until the latter have passed the susceptible stage. A concentration of 75 mg. per 100 grams seemed to be the approximate border line above which definite inhibition of spore germination was found. Although concentrations as high as 300 mg. per 100 grams had a definite inhibitory effect, they were not completely bactericidal.

When individual larvae were inoculated, American foulbrood spores subjected to a concentration of 15 mg. of sulfathiazole per 100 grams for 48 hours appeared to be still capable of producing disease.

Feeding sulfathiazole in a concentration of 0.5 gram per gallon of sugar syrup to colonies infected with American foulbrood appeared to

check the spread of infection in most of the colonies. It had no effect on the Nosema disease, European foulbrood, or sacbrood, or any significant effect on the temper or vigor of bees.

Nosema Inhibited by an Arsenic Compound

Of several chemicals tested for controlling Nosema disease, carbarsone, a compound containing arsenic, showed the greatest inhibitory effect when tested on bees in cages. A concentration as low as 0.25 percent was found to arrest the disease, but it shortened the life of the bees. A concentration of 0.05 percent in sugar syrup fed to four infected colonies failed to show any inhibitory effect.

American Foulbrood Spores Produce Four Antibiotics

An outstanding feature of the year's work was the demonstration that **Bacillus larvae**, the organism causing American foulbrood in honeybees, produces not one but four separate antibiotic substances, one of which is active against the bacillus responsible for an important disease of man.

By appropriate chemical treatment the toxicity of these antibiotics has been greatly reduced, sometimes to the point where none could be detected. However, optimum conditions for obtaining them must be worked out, especially since slight changes in technique or reagents frequently greatly modify the product obtained, with respect to both potency and toxicity. Relatively nontoxic solutions that are very active against the tubercle bacillus have been obtained repeatedly.

Observations on DDT in Relation to Honeybees

Commercial applications of DDT to alfalfa seed fields in Utah for the control of **Lygus** bugs killed some of the field bees. Brood was not affected. The damage resulted from dusts applied when the fields were in flower, which is contrary to recommended practices. The application of DDT, however, increased the flowering of alfalfa about eight-fold over undusted plots. The honey crop was larger than in preceding years in spite of bee losses. Some injury was also obtained in alfalfa fields in California, and the bees stored little honey. DDT was recovered through chemical analysis of samples of dead bees.

Extensive DDT applications for the control of citrus thrips in central California, on the other hand, caused little or no trouble to beekeepers. They harvested a good crop of honey.

Surfaces sprayed with suspensions of DDT in water were generally toxic to honeybees brought in contact with them. The toxicity varied with the dosage and the exposure period. When 0.5 gram dosages of 1-percent suspensions were applied to small cages, the residue killed most of the bees in contact with it for 15 minutes or longer, but concentrations of 0.1 percent had little effect.

Dusts containing 5 percent of DDT were highly toxic to caged bees whether applied directly to the bees or to the cages alone, dusts containing 2 percent of DDT caused some mortality, while dusts of 1 percent or less were relatively harmless. When caged bees came in direct contact with DDT dust, they were repelled and discarded adhering dust. There was no indication that the bees could detect DDT on sprayed surfaces, however, or that the odor was repellent.

Queen cage candy containing 0.5 percent of DDT and pollen paste containing 5 percent of DDT killed all bees feeding upon them, but pollen paste containing 0.5 percent killed but few. The bees eagerly consumed the queen cage candy, whereas those offered pollen paste consumed little of it.

2,4-D Not Toxic to Bees

In limited laboratory tests bees fed various concentrations of 2,4-D in sugar syrup lived as long as bees not so fed and behaved normally. Dandelions sprayed with 2,4-D showed no blossoms after 24 hours, and therefore would not be attractive to pollinating insects.

Bees Prefer Pollen Supplement to Substitutes

Colonies given a choice between pollen supplement and substitutes showed marked preference in the following order: Pollen plus soybean flour, soybean flour alone, soybean flour plus brewers' yeast, and soybean flour plus brewers' yeast and dried egg yolk. There was no marked difference in the amount of brood produced by colonies fed the different pollen substitutes.

Comparing Notes on Wintering

By C. H. Pease

I read with interest in the November Gleanings Roland T. Heacock's article on "Wintering the Bees — How it is Done in Connecticut". I note that in referring to outside vs. cellar wintering, he has "tried both methods on a small scale", and states that on the whole he is "beginning to incline toward out-of-door wintering".

Although Mr. Heacock and I are located in opposite corners of the state we are in almost the same latitude and our winters can't be strikingly different.

From my 28 years of wintering experience, 26 of which have been in a cellar, I am convinced that cellar wintering failures are due almost entirely to either poor food, faulty cellars, or both, principally the latter, in which temperature and moisture conditions are not adequately controlled, and I feel certain that Mr. Heacock's cellar is mostly responsible for his "beginning to incline toward out-of-door wintering", because good bee cellars don't work as he said his did. This is proved by his statement that his bees "roar and buzz in the cellar" so that he "put them out some mild March day"; then when "freezing weather of the worst kind set in" he lugged them back down cellar.

I can't conceive of a condition that would drive a cellar winterer outside any quicker than that, and I never had an experience like it.

I was pleased to read in "Second Glances" in the December Gleanings Mr. Isaacson's statement: "I still believe that a **good** cellar is preferable to any method of outside protection in our climate". I say "Amen" to that, with emphasis on the **"good"**.

A cellar that causes bees to "roar and buzz" is worse than wintering outside, and the cause should be remedied, which in most cases can be done. But a cellar in which the bees are so quiet that one can walk through it and scarcely hear a sound is a life-saver for bees (and cash), as mine has been for 26 years without a single loss.

"Doctors disagree" and so do beekeepers, but I have learned a lot from beekeepers who don't agree with me nor my methods. I like to base my opinions on facts rather than theories or guesswork as many do, and with this in mind perhaps some of my experiences may be helpful to others.

At my age (81) I am not particularly fond of lugging jobs, and besides, the shaking up from so much moving in and out of the cellar is not good for the bees—one move in the fall and another in the spring is all mine get.

I took the lugging, and also most of the disturbance to the bees, out of my moving jobs by building a special wheelbarrow that automatically grabs the hand-holds in the hive and easily lifts it off its stand, rolling it into the main cellar as smoothly and easily as pushing a baby carriage; there it is placed on the scale to be weighed, then the mechanism automatically releases its grip and moves off. When the weighing is done and the weight recorded the wheelbarrow is backed up to the hive, takes hold of it, and rolls it into the bee cellar. The time spent on the whole job averaged a fraction over ten minutes per colony, and I did no hurrying.

Mr. Heacock said: "If one has the equipment for it out-of-door wintering saves a great amount of work". Of course, with double-walled hives there is no packing to do, but I find very few double-walled hives in use. While they may be better than single-walled hives for outside wintering they are clumsy to handle all summer, they cost more, and have other disadvantages. I notice that the single-walled ten-frame hive is the standard and favorite with most beekeepers; certainly the ten-minute job of moving the single brood chamber into the safety of a good cellar should not be "a great amount of work" but a very profitable job, considering the several dollars' worth of food saved and escaping the hazards of outside wintering.

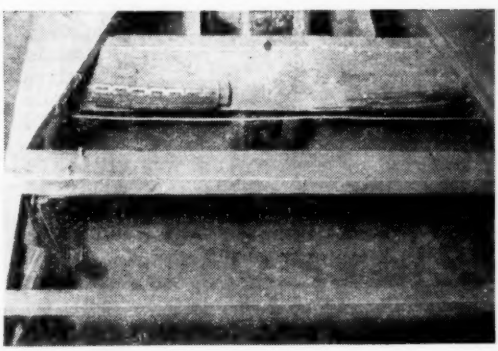
Moving the hives in and out of the cellar seems a bugbear to many who have never done it, but when comparing notes with one beekeeper who thought the work of hauling my bees in and out must be "awful", we found that, according to his own

statement, I put in six colonies, weighed them and recorded the weights, in the same time he gathered the materials and packed one, and there was nothing "awful" about the hauling, as described above.

Mr. Heacock's statement that "a temperature of 50 degrees in the cellar is about right to keep the bees quiet" may be right for his cellar, as all cellars are not alike, but it is not right for mine, if he means for all winter. They will keep quiet at 50 for a short time after they go in, but I have observed that later they become more active just when everything should be done to keep them quiet. The more active they are the more food they consume,

Mr. Pease with his hive mover, showing how simple it is to pick up a hive of bees and wheel it into the cellar.

and that is liable to produce dysentery before spring. That the warmer temperature causes increased activity was proved to me, not by theory but by accurate records. I have complete record books for every year that I have kept bees and they tell me that during winters when I kept the temperature in the cellar around 45, and lower as the winter progressed, the consumption of stores was, some years, as low as 7½ pounds per colony average. Then when I was induced to believe

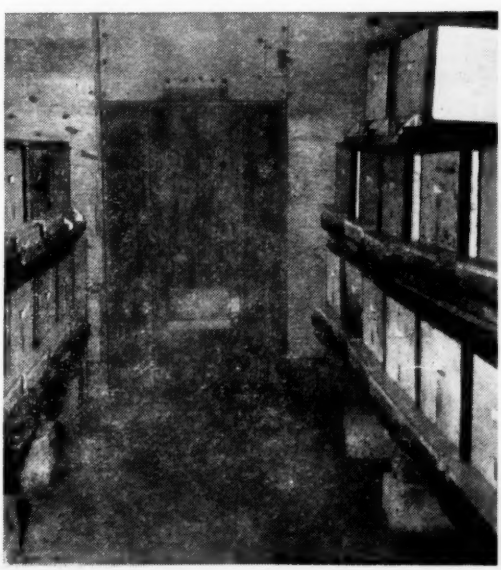


This shows the underneath construction of the hive mover—the hooks that grab into the hand holds.

that a higher temperature would be better I tried it with the following results:

Winter of:	Number of days in cellar	Food consumed Average per colony
1939-40	128	9 pounds
1940-41	125	8¼ pounds
1941-42	118	10 pounds
1942-43	124	10¼ pounds
1943-44	120	12 pounds
1944-45	97	10¼ pounds
1945-46	99	9 pounds
1946-47	134	12¼ pounds

I weigh every colony when it goes into the cellar and again when it goes out, from which the above figures are taken. I have now gone back to the lower temperature of about 45 degrees and hope to reduce the consumption of stores to the original 7½ pounds or thereabouts.



Interior of the Pease repository for the bees, where they rest as snug as a bug in a rug.

As to the expense of food for wintering, Mr. Heacock stated that "Forty pounds of honey is enough for the average hive in my locality". Editor Deyell said on page 443 of Gleanings for July, 1929: "Honey, like time, means money", and I agree with him. At the time Mr. Heacock made his statement honey was selling around here at not less than 35 cents per pound, and in most cases more, and sugar cost nine cents. Sugar syrup is acknowledged to be better and safer as a winter food than fall honey, and every one of my colonies gets not less than 15 pounds of it in late October, which they store in the cells vacated by the last emerged brood; that carries them through the entire winter and they have the honey they stored the fall before for brood rearing in spring. This does not mean that I take honey from the brood chamber and substitute sugar syrup—I never did it. If my arithmetic is correct that 40 pounds of honey would bring about $14.00 at the prices prevailing at that time, and the sugar in 15 pounds of syrup (10 pounds) cost 90 cents. Even if the same amount of syrup should be fed to stimulate brood rearing in spring (which I never did to half that extent) the expense would be less than two dollars.

I have no desire to influence anyone in his choice of the way he wishes to winter his bees, but I have yet to find a method that suits me better than the one I have.

I am, like Mr. Heacock, a small beekeeper. My bee cellar is a compartment off from our vegetable cellar and also from the main and warm house cellar, the location of which was illustrated in the last December Gleanings on page 711. It has semi-automatic ventilators that take care of practically all air conditions, and has brought through every normal colony I have owned (a total of 913 in 26 years) without a single wintering loss, and at much less expense than it could be done outside; in those 26 years we had all sorts of winters—good, bad, and otherwise. I starved one weak colony —a late swarm with little honey— 15 years ago, by doing the fool trick of trying to see how little sugar syrup a colony could winter on, but the cellar could hardly be blamed for that.

As for "walking amid snow-clad hives" in winter, I must confess that wallowing through snow among the hives (if I wintered outside), as Mr. Heacock said "to see that all is well" does not appeal to me, because, as a matter of fact, one can see nothing that is "well" or otherwise inside by looking at the outside of the "snow-covered hives". Although I seldom enter my bee cellar in winter, there is nothing to prevent my doing so at any time, day or night, regardless of outside weather, and with a flashlight peek into the 1½-inch deep entrance and seeing the cluster, perfectly quiet and happy —positive proof that all is well inside. The thermometer, visible from the main cellar without opening the door, tells me the condition inside without entering.

It is claimed that colonies wintered outside come out stronger in the spring than those in cellars. Yes, if the cellar is not what it should be, and if everything outside, including weather, is favorable. However, as the pros and cons of the two methods of wintering make too long a story to discuss here, suffice it to say that most of my cellar wintered colonies are up to swarming strength before the main honey flow starts in early June (my first swarm in 1947 came out May 19, and others followed).

What interests me most is RESULTS, regardless of by what method they are obtained, and many beekeepers disapprove of my ways of getting them. However, by way of comparison I shall quote from the government honey crop reports for the past three years, giving the per-colony average for all New England and for my state of Connecticut, as compared with mine for the same periods:

Yields per Colony Average

	1945	1946	1947
New Eng.	31 lbs.	25 lbs.	33 lbs.
Conn.	40 lbs.	35 lbs.	37 lbs.
Mine	76½ lbs.	47¼ lbs.*	74½ lbs.

*The spreading of DDT poison in gardens all over our town killed six of my colonies and weakened all others in 1946, resulting in but little over half a crop of honey.

As my honey crop is seldom over 1200 pounds since I reduced the number of my colonies (in 1947 it was 1192 pounds from 16 colonies) it is all stored in 60-pound cans into which it runs direct from the ex-

(Continued on page 121)

Annotations

By Prof. A. Z. Abushady
United Nations, New York

Equalizing or Uniting?—We are reminded by Clarence Tontz (p. 706) of "Dr. Miller's method for getting the best possible honey crop by sacrificing the little colonies in order to build up the big colonies; this method although old is still modern". To my mind and in my experience, this is simply common sense application of rational methods. Starting in spring with a number of weak colonies on hand and an impending honey flow in sight, obviously the most constructive procedure would be to sacrifice quantity for quality. A smaller number of strong colonies through uniting would be more productive than a mixture of good, weak, and indifferent colonies. On the other hand, in case of a late honey flow, and provided the queens are good or good queens are procurable, there is no advantage in uniting and reducing the number of colonies in the apiary. It would pay better to equalize the strength of all your colonies and to maintain their number, weekly attention if possible to be given to them for this purpose.

Research on Bee Products.—The studies that will be conducted at the Agricultural Research Center at Beltsville, Maryland, by the Division of Bee Culture, Bureau of Entomology and Plant Quarantine, in cooperation with interested medical institutions, should interest the beekeeping world, apart from scientific people (p. 713). Under the Research and Marketing Act of 1946, these studies will be made in order to discover and develop new and improved uses for apiary products such as promising anti-biotics and bee venom preparations. A greater significance is to be found in the healthy interests of peaceful activities which assuredly need to be expended and ramified. Whatever funds are given to scientific research can never be wasted or regretted and will be easily afforded by this great country which spends annually seven billion dollars on liquor, and yet its House of Representatives in 1946 defeated a bill to appropriate 100 million dollars for cancer research!

Safe Insecticides. — Eide's report in the **Journal of Economic Entomology** on experiments with insecticides on honeybees is very interesting and should be put into practical application through the influence of beekeepers' organizations. Whilst DDT proved to be much less toxic to honeybees than calcium arsenate or cryolite when used in a 5% dust, it is assuring and inspiring to know that of the materials tested 2,4-D, piperonyl, cyclohexanone, xanthone, velsicol 1068, and phenothiazine are non-toxic to bees.

Virus Diseases of Bees.—The November **Bee World** rightly criticises R. Lutz of Tunis for claiming in **La Gazette Apicola,** without adequate experimental data, that Nosema, sacbrood, paralysis, and the foulbrood diseases are due to viruses. Similar assertions that have no scientific background whatsoever are unfortunately too common in writings and used to be more common in the past. The only cure for this misleading malady is the emphasis on scientific research, the sound results of which should alone form the basis of deductions and practical applications.

"Bee smoker! . . . . I never use one."

Let's Have a Party

By Mrs. Benj. Nielsen

Honey fancies for that Valentine party.—Photo courtesy the Kellogg Co.

With so many holidays and great birthdays to celebrate this month, novelties and decorations cunningly displayed in the stores and magazines, are you tempted to have a party? And have you been wondering about refreshments? Let honey come to your aid again.

Nut breads are a boon to party-minded cooks. Served in the ordinary loaf slices, or cut in fancy shapes to carry out the particular theme you have in mind, they will meet the approval of both youngsters and oldsters. Scrumptious honey nut breads should be made well ahead of party festivities to permit that wonderful honey flavor to work its magic.

What to serve with these nut-breads? There is nothing easier or quicker to prepare than a tempting salad of honey canned fruits to accompany these tasty breads. Pineapple rings, apricots, peaches, or pears on crisp lettuce cups, with a bit of banana brushed with honey and sprinkled with nut meats, a prune stuffed with creamy granulated honey—place it right in the center for contrast. Easy? Good —and good for you! Have fun!

Honey Bran Nut Bread

One egg, ⅔ cup honey, ¾ cup milk, 2 tablespoons melted shortening, 1 cup bran, 2¼ cups sifted flour, 3 teaspoons baking powder, ½ teaspoon soda, 1 teaspoon salt, and ¾ cup chopped nutmeats.

Beat egg until light, add honey, milk, shortening, and bran. Sift flour with baking powder, soda, and salt; combine with nutmeats; add to first mixture, stirring only until flour disappears. Spread in greased loaf pan with waxed paper in bottom. Bake in moderate oven, 350 degrees F., about 1 hour and 10 minutes. Yield: 1 loaf, 4½ x 9½-inch pan.

Honey Cherry Tricorns

One fourth cup honey, ⅛ teaspoon salt, 2 tablespoons cornstarch, ½ cup cherry juice, and 1 cup canned, pitted cherries.

One half cup shortening, ¼ cup sugar, ½ cup bran, 1 egg, ½ teaspoon vanilla, ½ teaspoon salt, and 1½ cups sifted flour.

Mix honey, salt, and cornstarch together; add cherry juice. Cook until thick and smooth, stirring constantly. Add cherries. Cool.

Blend shortening and sugar. Add bran which has been rolled into fine crumbs, egg, flavoring, and salt. Mix well. Stir in flour. Chill. Roll out dough on lightly floured board to 1/16-inch thickness. Cut with floured 3-inch cookie cutter and place on cookie sheet. Place teaspoon of filling on each round. With a spatula, lift three sides of the round to form triangle. Pinch edges together, shaping into tricorns. Bake in a moderate oven, 375 degrees F., about 15 minutes. Yield: 18.

Honey Fancies

One half cup shortening, ⅔ cup honey, 1 egg, ½ cup bran, about 3½ cups sifted flour, 3 teaspoons baking powder, ¾ teaspoon salt, ½ teaspoon soda, ¼ cup orange juice, and 1 teaspoon grated orange rind.

Blend shortening and honey together thoroughly. Add egg and beat well. Add bran. Sift flour, baking powder, salt, and soda together; add to first mixture alternately with orange juice and rind. Chill. Roll out dough to about ⅛ inch thickness, working with a small amount at a time and keeping remainder chilled. Cut with fancy floured cookie cutter. Bake on ungreased baking sheet in moderately hot oven, 375 degrees F., 12 to 15 minutes. Yield: 4 dozen, 2¼-inch diameter.

Aurora, Nebraska.

Live and Learn

By Propolis Pete

It won't be long now. We are getting pretty close to the time when you will begin to wish that you had taken care of things back in February, when you had time — such things as ordering packages, cleaning and painting hives, sorting combs, trying out wax, and other chores that are both a delight and a burden to new and old beekeepers.

Me? I'm all set. I have nothing to do until the bees start to fly and I can get into the hives without damage to see if the bees need anything. Just because I don't approve of opening hives in cold weather, and also don't approve of indiscriminate feeding, it doesn't follow that I am against those practices in moderation, and when they are necessary

So let's philoph— philosh— darn that word—again about beekeeping in general.

I see by the Government's semi-monthly honey report (furnished free to beekeepers, and interesting, too) that there is quite a bit of sales resistance to honey. Well, it was to be expected, although I think that the worst words that can be spoken are "I told you so". If not the worst, they are the most exasperating. None of us likes to be reminded that he cannot see the woods because there are so many trees around.

It's a funny thing, but the very word honey seems to signify luxury. People consider it as another sweet, delicious it is true, but higher in price than other sweets. Something to be enjoyed when they are in the money. One of the first things to be ditched in favor of another that costs less. The cure for that is merchandising.

With my limited production, I have no sales problem. Enough real honey lovers know about me to take off my hands far more than I can produce. Even though my price is higher than the chain stores, it is gobbled up so fast that I have to ration it out. The reason for that is, lucky stiff that I am, I am in poor beekeeping country. Real honey, right off the hive, is so rare that honey lovers search me out as a source of honey.

I don't think that my honey is any better than a lot sold in the stores, going through the regular market channels; in fact, my personal opinion is that a lot of it is better than mine. Not always. I had the experience once of a storekeeper putting on a high pressure sales talk to sell me some honey that looked like, and smelled like crankcase drainings, but which was represented to me as pure clover honey. I wish I had a movie of his face when I delivered a lecture on the chemistry of honey, the mechanics of honey grading, and the determination of flavor and color from the floral source. All I can say about it is that it is a good thing that this storekeeper did not know much about honey. Maybe he had believed some unscrupulous honey s a l e s m a n. (There are some of them, too.) I laid it on so thick that I was expecting someone to say "Vas you dere, Sharlie?" Remember the Baron Munchausen?

Isn't it funny how I keep getting off the subject? I'll never learn to keep my mind going straight. Maybe that is one of the reasons I am a beekeeper. Let's get back to business. February is the time to do those things that can't be done during the rush season. I've heard of painting hives on the stand, with bees in them, and have tried it. When I did I lost a lot of bees because they lit on the wet paint and stuck as though it were fly paper.

I've had the fun of knocking together some kind of a hive when a swarm was out on a limb. It's fun to look back at it, but not forward to it. I've run out of foundation, and had to put in starters, and then fuss for a couple of years trying to work the drone comb out of the brood nest. I've even run out of foundation so far that I had to put bees on empty frames. Don't ever do that. A box hive may offer problems when you are trying to transfer to a frame hive, but a frame hive used as a box hive just simply cannot be described. Imagine the combs running kitty-cornered across the frames tying all ten of them together, and the frames being propolized to the ends of the hive.

XUM

A Talk to Beekeepers

By M. J. Deyell

It is necessary to prepare these talks a few weeks before they are read in order to get our journal out on time. Today, January 15, we are having real winter weather around Medina. The mercury got down to 2 degrees below zero early this morning. The winter thus far has been quite favorable for bees although they could stand a good cleansing flight in the near future.

If I should look into a hive of bees today I would find the bees clustered tightly in the shape of a sphere, and very quiet. This ball of bees would be found between the combs and would occupy the center portion of from four to seven spaces, depending on the size of the colony.

The Winter Cluster

The outside shell of the cluster is approximately two and a half inches in thickness and consists of bees with their bodies close together and heads pointing toward the center of the cluster. These bees in the shell or rim are practically motionless. The bees on the inside of the cluster are moving about slowly and are not clustered tightly. These bees generate heat by muscular activity and the bees on the outside of the cluster retain a portion of this heat, maintaining a minimum temperature of approximately 57 degrees F. in the middle of the cluster during the broodless period. The temperature may, and usually does, go above 57 degrees at times.

Bees have a period of quiescence for a couple of months during the year in this locality during November, December, and early January. During this time the colony is broodless, or practically so. The queen may lay a few eggs, especially if she is a young queen.

The bees live very slowly, expending the minimum amount of energy. That is probably what the Eskimos do up in the Arctic regions when they have a few months of darkness. But we whites scurry around in the cold and try to keep warm. It may be that we do not have as much sense as the bees. I was thinking about this some time ago and concocted the following bit of verse:

"Perhaps the time may come,
who knows?
When we can fool the winter snows
By rolling up into a ball
When come the chilly winds of fall,
Then, sleep and dream the winter through
Instead of freezing as we do."

Beekeeping May Look Simple

Last summer on a trip into Wisconsin to attend some regional meetings, on the train out of Chicago I sat with a young chap who was reading a big book. It developed a little later on, when we struck up a conversation, that he was taking work in a medical school. Finally he inquired about my work, and when I told him I was a beekeeper he said,"Oh, yes, I understand there isn't much to the business of beekeeping—that all you have to do is get some bees in some hives, then put on supers, and a little later on take off the supers of honey, extract it, then sell it, and let the bees rest during the winter while you go to Florida or some southern state to enjoy the sunshine". Of course, I had to smile. Then I proceeded to disillusion his mind on some of the preconceived ideas he had concerning beekeeping.

Beekeeping Can Be Made Simple

This young medical student had some good ideas and practically outlined in his remarks the necessary procedure in apiary management during the season but apparently he had the idea that managing and manipulating hives of bees can be done by rote; that is, doing certain things at certain times of the year, in a mechanical fashion. Strange as it may seem, some beginners occasionally have what we might call "fool's luck". They happen to do the right things in the way of colony manipulation at the right time without realizing just what they are doing. These beginners get very much enthused and perhaps increase the number of their hives materially during the season. The following season may have weather conditions entirely different from the preceding one and consequently the bees may not respond to the type of apiary management this beginner has worked out and he will secure little,

if any, honey. He wonders why he did not get a crop and it begins to dawn on him that this season was different from the preceding one and that a skillful beekeeper must learn something of the principles which underlie successful beekeeping and then learn how to apply them. This is easier said than done.

Different Ways of Securing the Same Results

Occasionally I meet beekeepers who think that they have discovered the best way to manage bees and the best equipment and kind of bees to use, and if others do not practice their methods success cannot be attained. Of course, these beekeepers are mistaken.

One beekeeper may use one type of a hive; another may use a different type. Both may secure good crops of honey. One beekeeper may use a certain strain or race of bees; another may use an entirely different strain or race. Both may be successful. One may use a method of swarm control that perhaps some other beekeeper would not use. If this beekeeper secures a good crop of honey, that is what counts.

We Should Work for Uniform System

In spite of what I have tried to say, I do believe that we should have more or less of a uniformity throughout the country in securing and handling crops of honey. If we had the country regionalized as to beekeeping regions, it would certainly be a simpler matter to guide beginners on the road to successful beekeeping.

The difficult part in trying to tell beginners what to do is that what would be suitable for one region might not fit another region.

However, if the principles of beekeeping can be explained to beginners so that they can be grasped, these beginners should in time learn how to apply the principles to conditions that prevail in the different regions.

For example, here in Ohio there are at least two beekeeping regions, one in western Ohio and the other in eastern Ohio. In parts of western Ohio there is little, if any, fall flow; in eastern Ohio there is usually a good fall honey flow. Beekeepers in western Ohio ought to make sure during the main flow that their colonies are provided with enough honey for winter. If they don't, sugar syrup will have to be fed in the fall to make up the deficiency in honey.

Here in eastern Ohio surplus honey is frequently secured from the fall flow. After beekeepers have learned the conditions that prevail they can manage their apiaries in such a way that bees are likely to have the necessary amount of food for winter and early spring stores.

Beekeeping in a Nutshell

Perhaps I should tell you how I manage my hives of bees during the season— hitting only the high spots. Before I do that let me say that **bees need only three things—first, some protection from the elements,** which means a hive in which they are to live. Bees during past ages have lived in hollow trees or crevices in rocks. I shall have more to say about the hive later.

Secondly, bees need comb space; that is, sufficient space inside of the hives for comb building, in order that these combs may be used for the storage of food—honey and pollen, and for the rearing of young bees.

Thirdly, bees require ample food at all times of the year, which means an adequate supply of honey and pollen. (Bees do need water and some salt; also propolis.) More bees die of starvation than from any other single cause, including disease. Some owners of the bees are so anxious to get surplus honey that they take away more than they should and consequently the bees are left without sufficient rations to die.

Now, when beginners start keeping bees, if they take time enough to sit down and think this matter through carefully—I mean this matter that has to do with the three important requirements for bees—and would use good common horse sense in apiary management, they would likely succeed. One trouble with many beginners—in fact, with so-called experienced beekeepers—is that they act first, then think afterward. They should **think first, then act.**

My Seasonal Management, Briefly

Early in the spring on the first

(Continued on page 101)

Second Glances

By C. M. Isaacson

A favorable future for beekeeping is the consensus of Woodrow Miller's article (page 1). This is good to read in the first article in Gleanings for 1948. He is right, of course, in saying that the picture for commercial beekeeping, especially, has changed considerably in the last several years, what with better financial condition of individual beekeepers, increased consumer interest in honey (brought about in no small measure by the American Honey Institute's work), and the rise of various cooperatives (which last, however, still have some very definite problems to solve if they are to be the factor in the honey market we hope they will become). But I must agree with the Editor's comment that the backlot beekeeper is definitely not gone, and should not be, for he is just as essential to our industry as the commercial operator.

A million dollars of fun, says Mr. Heacock in describing his beekeeping activities down through some 25 years. I like to read such statements—they have a pleasant ring. When we can take fun through all that the years offer us, it means our life is a fuller and better one. More power to such beekeeping, carload producers to the contrary notwithstanding. (page 4).

Comb building material is not too difficult to detect, I do not believe (page 7). If Mr. Stranzl will watch carefully he will be able to see wax scales appear as small whitish growths along the abdomens of the clustered comb builders. It is most easily seen during a good honey flow, of course, but careful observation can usually find this evidence whenever the work is in progress.

Results from different races vary according to locality and season. Mr. Thomson's production from his Carniolans was certainly conclusive for his case. In another instance, a beekeeper may report for Caucasians, still another for Italians. One definite advantage that Italians have over the darker races is the fact that a strain can be kept pure so much more easily. It is extremely hard to do this with Caucasians—and also with Carniolans, which is a big reason for the preponderance of Italians today. (page 10).

Cooperative work for better bees is certainly work that will benefit beekeepers everywhere, and when private beekeepers who can give the stock actual field testing are undertaking such an experiment along with the Bureau of Entomology who can furnish trained assistance on the technical side, as well as financial support that the individual apiarists would be unable to find alone, the results surely should bring definite improvement (page 12). We will all watch this project with very real interest.

Stimulative feeding often does seem to be not only unnecessary, but in the end, harmful. There are exceptions, of course, but as a general rule an upper story of honey and pollen is plenty of "stimulation" for any colony. If I have to feed (nucs and packages are possible exceptions), I prefer to give a large quantity at once—less is lost through excitement and gorging. Then too, with many outyards, one just cannot get around to feeding steadily in small amounts (page 17).

Increased disease in New York State bore a direct relation to the number of inspectors available (page 18). This is not surprising, of course—the only real answer to AFB is vigilance, and that is true whether sulfa or burning is the method of "treatment" (page 18).

The proposed bee shippers' organization has outlined some definitely worthwhile objectives (page 19). If such an organization could effect a working relationship with a northern project with similar aims—such as the Ohio Improvement Cooperative (page 12) certainly a great deal could be accomplished. A big job, but isn't it worth trying?

Congratulations to Gleanings on its 75th anniversary! It has seen some remarkable changes in the industry it represents, and has taken part in some manner or another in them all. Its influence has been no small thing in many ways—no small part of this being its constant appeal to moderation and common sense. More power to it in the next 75 years!

American Honey Institute News Notes

By Harriett M. Grace, Director
Commercial State Bank Building
Madison 3, Wisconsin

The honey industry needs you. The American Honey Institute is increasing its efforts in behalf of the honey industry to promote the use of honey. A broader program of activity is being planned in order that the work of the Institute can be even more effective.

The success of this program depends on you as an individual member of the honey industry. If you are interested in seeing the development of a wide-spread honey market — and every beekeeper should be—you will want to lend your support to the Institute.

The more actively every individual supports the Institute, the more services it can render to the industry, and the more effectively it can function.

* * * * *

Honey makes most other foods better. Food companies recognize this fact and use many honey recipes in their national advertising.

In professional journals the dried fruit people are featuring a Honey Prune Pie.

A leading meat packing firm is advertising Honey Glazed Ham in women's interest magazines.

* * * * *

In 1947 the American Honey Institute had over $12,000 worth of printing done in behalf of the entire honey industry. This figure represents only the cost of the actual printing of honey literature. It does not include the cost of the labor involved in preparing the material for printing—the writing, designing, art work, and development of recipes.

As a result, there is now a goodly supply of honey literature available to you — available at cost! These new materials were printed:

NEW FAVORITE HONEY RECIPES, a 56-page, plastic-bound honey recipe book.
TWO SWEET GIFTS FROM NATURE, CITRUS FRUITS AND HONEY, an 8-page leaflet.
TWO NEW FAVORITE HONEY CAKE RECIPES, a 4-page recipe leaflet.
HONEY ICED TEA, an illustrated honey recipe card.
1948 HONEY CALENDAR, a pocket-size honey calendar.

Revised printings were made of:

MAKE EVERY MEAL A GUEST MEAL WITH HONEY RECIPES, a 6-page recipe leaflet for five-pound pails.
HONEY SELLING HELPS, an illustrated price list of honey literature.

The popularity of honey literature is proved by the fact that all these reprintings were necessary:

OLD FAVORITE HONEY RECIPES, a 52-page honey recipe book.
HONEY, a 12-page bulletin of nutritional facts about honey.
HONEY AND CEREALS, a 6-page honey recipe leaflet.
HONEY IN BAKED GOODS, a 4-page bulletin of commercial honey formulae.
TWO SWEET GIFTS FROM NATURE, CITRUS FRUITS AND HONEY.
1948 HONEY CALENDARS.

* * * * *

These are excerpts from just three of the many letters that the Institute receives from homemakers:

"Will you please send me your new book, NEW FAVORITE HONEY RECIPES.

"We've used the OLD FAVORITE book so much that even though plenty of sugar is available, we've acquired a habit of using honey as well as a desire for the flavor in the foods we eat."

* * * * *

"I don't seem to be wanting to use sugar yet, for I have had such good luck with your recipes using honey!"

* * * * *

"Mr. B gave us a Honey Recipe Cook Book last week when we got our honey of him.

"This is the most complete Honey Cook Book that I have seen."

* * * * *

Good honey recipes make loyal honey users. You can make your customers repeat customers by supplying them with reliable, tested recipes. Write today for a price list and make your own selection.

Just News

A meeting of the North Star Beekeepers' Association will be held at the St. Paul Public Library, 90 West 4th Street, February 17, 7:30 p.m. Dr. Haydak of the University of Minnesota faculty will show color moving pictures taken by him and will talk on subjects interesting to beginners as well as to experienced beekeepers.—Robt. W. Anderberg, Pres.

* * * * *

The Vermont Beekeepers' Association will hold its winter meeting in connection with the Agricultural Council, Thursday, February 12, at 1 p.m. We shall meet in Mario's Restaurant, Barre, Vermont. After luncheon the meeting will be held at the City Auditorium in the afternoon. All Vermont beekeepers should send samples of their honey about a week before to Mr. H. A. Dwinnell, Montpelier, Vermont. The meeting is open to all persons interested.—Charles Mraz, Sec.,

* * * * *

The Bronx County Beekeepers' Association will hold its next monthly meeting at the home of Mr. Frank Glazer, 3424 Gates Place, Bronx, N. Y., at 2:30 p.m. Sunday, February 8.—Sam Roberts, Secretary.

* * * * *

The Westchester County Beekeepers' Association will hold its regular monthly meeting at 2:30 p.m., on February 15, 1948, at the Odd Fellows Hall, 20 Lockwood Avenue, New Rochelle, N. Y. Movies will be shown following the meeting, and refreshments will be served. Visitors are always welcome.—B. F. Miller, Publicity.

* * * * *

The Cook DuPage Beekeepers' Association will hold its 27th annual meeting and banquet Saturday afternoon and evening, February 14, at the Art Institute, Adams Street and Michigan Blvd., Chicago, Ill. Meeting at 3 p.m. Turkey dinner at 6:30 p.m. $2.50 per plate. Fine program being arranged. Come early enough so you can see some of the famous works of art. For reservations write A. J. Smith, Box 234, Worth, Ill.—A. J. Smith.

* * * * *

Cuyahoga Beekeepers, Cleveland, Ohio—Come have an afternoon of bees with us, Sunday, February 22, in the Auditorium of the Cleveland Museum of Natural History at 1:30 p.m. There's an impressive program worked out around Dr. E. F. Phillips of Cornell University; James W. Bain, our queen breeder from Marion, Ohio; George W. Watkins of Neenah, Wis., exponent of hive ventilation, and our oldest member, Dr. E. R. Root of the A. I. Root Co. Everyone's welcome! How can you afford to miss it?—Ed Johnson, Sec.

* * * * *

A special get-together of the Connecticut Beekeepers' Association will be held in the Rocky Hill Grange Hall, Rocky Hill, Conn., on February 21 from 10 a.m. to 3 p.m. Bring your own lunch. Hot coffee will be served. This is for everyone interested, but especially for the benefit of those who find it hard to spare the time for the April meeting and who like to swap experiences with other beekeepers.—I. Richardson, Chairman Pub. Com.

* * * * *

The Southern Tier Beekeepers' Association meeting will be held in Binghamton, New York, February 5, in the Court House at 7:30 p.m. One of the local comb honey producers, Mr. Oscar Austin, will speak on "How I Produce Comb Honey". Mr. Austin produces better than average yield per colony of comb honey for this area and we expect his talk to be highly instructive.—Russell P. Easton, Sec.-Treas.

* * * * *

A fire destroyed the entire beekeeping installation of the North Central States Bee Culture Laboratory located at University Hill Farm, Madison, Wisconsin, Sunday morning, January 4, representing a total loss to the University and the United States Department of Agriculture of $25,000. You will realize that replacement costs will be far in excess of this. We hope to go as far as possible in replacing the loss so that research work can be continued at the highest level of efficiency. We have no idea of how much money will be needed or where it is coming from, but the University Administration will assist to the fullest possible extent.

An annual meeting of the South Dakota Beekeepers' Association will be called at 10 a.m., Saturday, February 21, in the community room of the County Court House at Mitchell, S. D. An interesting program has been arranged and all beekeepers and others interested are urged to attend. For those who have far to come, there are three good hotels in Mitchell: The Lawler, Naven, and Widman. — Harold E. Mose, Sec.-Treas.

* * * * *

The winter meeting of Ohio Beekeepers' Association will be held March 23 and 24 in Room 100 of B and Z Building, Ohio State University, Columbus, Ohio.

* * * * *

The Alleghany County Beekeepers' Association will meet February 23 at 7:30 p.m. at the Downtown Y.M.C.A., Third Ave. and Wood St., Pittsburgh, Pa.—U. F. Abbs, Pres.

* * * * *

Elton Lawrence Lane, Trumansburg, N. Y., a prominent commercial beekeeper, passed away suddenly on November 22. Mr. Lane, aside from being active in church and civic affairs, was one of the original members of the Finger Lakes Honey Producers' Cooperative, Inc.

* * * * *

A new book on beekeeping by N. J. Nicolaidis of Athens, Greece, is now available to beekeepers in that country. The book is well illustrated and covers the management of bees for honey production, the rearing of queens, migratory beekeeping, as well as the honey and pollen plants of that country. Mr. Nicolaidis is an experienced beekeeper and an exporter of Hymettus honey.

* * * * *

Herman Rauchfuss of Englewood, Colorado died December 23 at the age of 85. He came to this country from Germany at the age of 19, first going to Louisville, Kentucky, and then to New York City where he worked for several years at his trade as a surgical instrument maker. He moved to Denver, Colorado in 1885 and shortly thereafter started keeping bees. With his brother Frank and several other honey producers, he organized the Colorado Honey Producers' Association in 1899. He was at one time one of the largest producers of section comb honey, and a breeder and raiser of Caucasian queens. He was an active honey producer and queen raiser until a few years ago, and continued to own bees and retain his interest in them until his death. He leaves to mourn his passing three sons, Herman of Worland Wyo., Otto of Englewood, Colo., and Eugene of Powell, Wyo., and three daughters, Mrs. Clara Thomas of Denver, Colo., Mrs. Della Bender of Powell, Wyo., and Mrs. Rosabelle Kuhn of Englewood, Colo., 15 grandchildren, and 7 great grandchildren.

* * * * *

Beekeepers' Program at Kansas State College during Agricultural Week will be held Wednesday, February 4, 1948 in Room 102, Fairchild Hall. Program as follows:

R. L. Parker, Professor of Apiculture and State Apiarist, Presiding.

9:00 a.m. Apiary Inspection in 1947 .....R. L. Parker

9:15 a.m. The Need of Improvement of Strains of Honeybees R. L. Parker

10:00 a.m. How Can the Present Strains of Honeybees be Improved? .....Wm. C. Roberts, N. Cent. States Bee Culture Lab., U. of Wisc., Madison, Wisc.

10:45 a.m. The Effect of Injurious Insects in Alfalfa on Blooming and Seed Setting .....W. W. Franklin, Research Asst., Kansas Agri. Exper. Station.

Roger C. Smith, Head of Department of Entomology, Presiding.

1:30 p.m. The Bee Equipment Supply Situation for 1948 F. L. Swanson, Mgr., A. I. Root Co. of Iowa, Council Bluffs, Iowa.

2:00 p.m. What Does the Commercial Honey Producer Want in a Strain of Honeybees? John C. Dods, Dods Apiaries, Troy, Kans.

2:45 p.m. The Genetics and Strain Improvement Plans and Work of the Division of Bee Culture, Bureau of Entomology and Plant Quarantine .....Wm. C. Roberts.

3:30 p.m. Visit to Kansas Agricultural Experiment Station.

XUM

From North, East, West, and South

SOUTHERN CALIFORNIA, Jan. 4

Weather: Here we are again starting a new year with an all-time dry record for the past twelve months. Los Angeles reports about four and one half inches, which is over twice what we have had in our town. Even the fellows who search the tree-ring growth records that are supposed to give rainfal records for hundreds of years, report 1947 as having the lowest rainfall. Occasionally we hear someone say, "Sometime the country will again return to desert."

Another low rainfall would be most unfortunate to the dry-farmer, who does not irrigate. However, irrigation from wells, reservoirs, the Colorado, Owens, and other rivers is so much used in Southern California that a dry season affects much of our country very little.

Miscellaneous: Usually the countryside is a carpet of green by New Year's Day. Shrubs, vines, and flowers are starting to grow. Grass often is six inches high. Alfilerae often is in bloom. Today one is lucky to find enough green grass to attract attention.

Orange growers are irrigating when their turn comes when usually it isn't necessary in the winter months. The seasonal rains take care of the moisture needed much more ecomically and better than the irrigation.

Some apiaries left on the summer locations without moving are short of stores and many should be fed. Most beekeepers who moved from the orange and sage locations of Southern California to the alfalfa, cotton, and thistle of Central California have taken advantage of the delightful weather to move their bees back to their southern locations.

Here is hoping that when these notes are read by Gleanings' readers Southern California will have had a good old-time soaking rain, which is so badly needed.—L. L. Andrews, Corona, California.

NORTHERN CALIFORNIA, Jan. 3

Weather: the rainfall during December was at least an inch short of the average and at present the total rainfall for the season is 1.5 inches below normal. During the past month traces of moisture did not amount to more than "fog drip". A rain of less than one tenth of an inch does little good except to prevent transpiration. The weather has been cool and morning fogs have tended to conserve moisture in the soil. The fields are green and pasture grasses have been excellent for livestock. The snowpack in the mountains is also below normal, so it will have to be a wet spring to bring up the soil moisture sufficient to sustain plant growth and to provide ample water for irrigation purposes.

The Honey Market: The Christmas season is generally a good period in which to move honey, especially at neighborhood stores. Three days before the students started home for their Christmas holidays, they purchased 93 five-pound tins of honey and would have taken more if we had had it ready a few days in advance. Local stores also sold some honey for Christmas presents. I believe the industry is missing a normal outlet by not making more of the opportunity by the use of appropriate signs and by advertising special Christmas packages.

Honey sales, otherwise, are said to be slow, but should pick up after the first of the year. On a recent visit to a large market in Sacramento only a couple dozen jars of 12, 16, and 32 ounces and two 5-lb. tins were found on the honey counter. The 12 ounce was listed at 34 cents, the 16 ounce at 43c, 2 pound jars at 77c and the 5-lb. tins at $2.61. On the shelf immediately below, 5-lb. tins of Karo were displayed for 63c. Obviously, the 5-lb. tins of honey had not been marked down and I wondered who would buy them

when one could get two 2-pound jars and a 1 pound jar of honey from the same shelf for $1.97.

Condition of Colonies: A hasty examination of some of our colonies indicated that strong colonies, well provided with honey, were wintering well, while some were not as strong in bees or honey as they should be at this time of year. Some of the colonies may need feed before early fruit bloom is available.

Miscellaneous: Most of the colonies have been moved to the almond orchards and beekeepers are generally busy in getting their "gear" in shape for the spring months. Package bee shippers are busy nailing up new cages or repairing old ones, for present prices on shipping cages makes the repair of good used cages a profitable pastime when one hasn't much else to do. More beekeepers than usual are also repairing their frames, bottom boards, and tops, and an increasing number are making their frames and other hive parts.

With the prices of equipment advancing, beekeepers can not see why offerings for honey still in the hands of beekeepers should go much below the 15 to 20 cents that most beekeepers are holding for. Are we headed for the old situation where beekeepers will have to pack their own honey and where each will become an active competitor of the other in the retail market? The present situation is causing many beekeepers to consider the advantages of cooperative marketing more seriously than ever before.

The annual convention of the California State Beekeepers' Association, held in Redding on December 9, 10, and 11, was well attended. The tour through the great Shasta Dam was enjoyed by a majority of those in Redding for the convention. (Some of the passageways through the Dam would make an excellent place for wintering bees.)

The beekeeping industry lost one of its pioneers in the passing of Mr. Herman Rauchfuss, Sr., at his home in Englewood, Colorado, on December 23. He was an ardent advocate of the Caucasian bee, did much to popularize it throughout the western states through his rearing of queens, and was one of the leading beekeepers of his day. He and his brother Frank were the founders of the Colorado Honey Producers' Association, and while both were active made that association the leading honey cooperative in this country. It was a great pleasure to have known Mr. Rauchfuss and to have profited by his advice and friendship.—J. E. Eckert, Davis, California.

TEXAS, January 9

Weather: December was generally moderate and agreeable with the normal amount of cold weather. While sleet and some snow occurred over wide areas there was no extreme cold such as was experienced during some recent years. Rainfall was somewhat below average but heavier than during any preceding month since August. Drouth continues over much of West and South Texas.

Bees and Plants: In the guajillo-catsclaw district where good crops of honey were produced the past three years the condition of honey plants at present is not promising; however, this area has remarkable ability of recovery whenever rain comes. In other areas native shrubs are normal and early spring-blooming annuals emerged after late fall rain. Horsemint is now beginning to appear but likely will not be so plentiful as last year. From Central Texas northward where legumes are the main source of honey fall seeding did not result in a good stand in some localities due to dry weather. Winter seeding of Hubam clover is generally very successful. Skunks and opossums are widely reported making serious depredations in some apiaries. These animals appear to be becoming more numerous. Bees have been fairly inactive and scale colonies show that consumption of winter stores has been relatively light. This condition is general and will save some winter feeding; however, considerable spring feeding will be necessary in many localities.

Market: While some improvement is noted in retail sales, movement generally continues slowly. Some retailers with supplies of early honey are not inclined to make price adjustment in line with reduced

prices of later pack, consequently the early pack is not moving. The effect of competition by other sweets is becoming more evident. Producers have disposed of a considerable portion of their crop but a fair portion remains on hand.

Miscellaneous: According to report of the Bureau of Agricultural Economics, U.S. Department of Agriculture, Texas ranks fifth among the states in honey production for 1947, with 1,314,000 pounds of honey from 192,000 colonies with an average yield of 45 pounds per colony. The large crop is due mainly to increased acreage of legumes and larger acreage of cotton with relatively light infestation by insect pests and less application of insecticides, consequently more colonies were kept in the cotton area than usual and fewer losses from poisoning were suffered. The goal of 303,000 colonies suggested for Texas in 1948 likely will be met because of demand for bees in crop pollination and a new crop of beekeepers. Bee supplies may be more plentiful but likely will remain high in price. Increased competition with other sweets may result in further decline in honey prices. Time is again at hand when cost of production must be reduced and honey advertised more vigorously to move honey crops of the future at a fair profit to the producer.

The officers of the Texas Beekeepers' Association Ladies' Auxiliary elected for 1948 are: Mrs. B. G. Burleson, Midlothian, President; Mrs. Edge Smith, Waxahachie, Vice-President; and Mrs. Stanley Weaver, Navasota, Secretary-Treasurer. We regret having listed the officers incorrectly in the December issue.—A. H. Alex, San Antonio, Texas.

MONTANA, January 6

Weather: The past year the weather was very unfavorable. During the middle of September we had our best snow storm to date. It looked as if all our late crops would be frozen out. Instead we had some rain and a very late frost the last of October. This year was above normal in moisture. So far we have not had any harm from severe weather conditions. The thermometer has averaged about 35 degrees here in the middle of the day all winter. We don't have any snow to speak of below 4000 feet altitude, but there is four feet of snow at 7000 feet altitude.

Crop Market: There were some discouraged beekeepers here early this season, but to our surprise we made more honey than the year before, and some sections may have had a normal crop. Most of the crop has been sold. It has been moving for 18 to 30 cents per pound. Most of the honey was shipped out of the state. Our market was temporarily ruined by being flooded with worthless honey. That situation has about cleared up and the call for good honey is improving and honey should move better.

Miscellaneous: Prospects for next year look good. Alfalfa, sweet clover, Dutch and alsike clover all look promising for the coming season. Ladino clover sown here was irrigated only once and it is nearly as green as it was in August.

Beekeepers of this section have organized and will meet quarterly. We have a nice group at meetings and a lunch after each meeting. We plan to end each year's work in June, when the Bitterroot Valley and other parts of western Montana plan to join in a day's picnic. The last two meetings were held in Missoula, Montana, with a very fine program and pot luck dinner. These picnics and meetings are planned to link up with our regular State Beekeepers' Association.—Parson Pile, Corvallis, Montana.

FLORIDA, January 8

Weather: We had an abundance of rain in most sections of Florida during the fall. In fact, some sections had entirely too much. In the southern part of the state there was so much water that it overflowed the rivers and canals and caused a great deal of damage. It has been reported that a large number of colonies of bees were destroyed by the high water.

On account of the abundance of moisture last fall, honey plants should be in fine condition in the spring. So far this winter we have had no freezing weather. We have

not even had frost severe enough to do any damage.

Condition of Bees: Taking the state as a whole, bees are in fairly good condition for this time of year. There are a few locations where the fall honey flows did not materialize, and the beekeepers are having to feed the bees.

Market: The honey market is slow. Of course, a large portion of the 1947 crop has been sold. Some beekeepers held for a higher price, and these beekeepers still have their honey.

Miscellaneous: The Florida beekeepers have been trying for several years to get an extension man in beekeeping and now they have succeeded. John D. Haynie, Jr., was appointed by the Board of Control as Bee Specialist with the Agricultural Extension Department at the University of Florida. Mr. Haynie started work on December 1. His address is: Extension Department, University of Florida, Gainesville, Florida.—Robert E. Foster, Gainesville, Florida.

WISCONSIN, January 8

The Bees This Winter: Colonies appear in excellent condition at this date. Last October we spent more time than usual preparing colonies for winter by surrounding the cluster with honey and pollen. Experience has taught this is more important than outside packing. This work took considerable time; then suddenly snow and cold weather in November made outdoor work disagreeable. We decided not to place the sheet of asphalt felt over covers in wind-protected yards. We believed the extra labor of preparation was most important. One experienced beekeeper said, "Often we put in so much time packing our colonies on the outside we don't have time to prepare them on the inside".

Serious Fire Loss: All the equipment and buildings of the North Central States Bee Culture Laboratory on University Hill Farm burned Sunday morning, January 4. Loss about $25,000, but how can hive bodies and instruments be replaced in time to carry on important experimental work? Unless one has seen the work being carried on it is impossible to appreciate what is being done for the industry. We think the facts being obtained by this laboratory will further change our beekeeping thinking in the next five or ten years.

Annual Convention of Wisconsin Beekeepers' Association brought out more than 200 of the 675 members. State dues are now $1.25 per year. The convention voted to ask the State Department of Agriculture to improve the honey grading law, and publish a bulletin of apiary laws and honey grades. The last legislature passed a law making it necessary for anyone extracting honey for food to have a license as a food handler and qualify under state regulations pertaining to sanitation.

Some beekeepers advocated establishing a grade of "Wisconsin Fancy" honey. Mr. John Long, State Inspector, pointed out our stores are displaying honey from other states labeled "U.S. Fancy" and customers are asking if that is better than our "Wisconsin No. 1 White". The State Association is divided into six District Associations which will hold spring meetings at which these matters will be discussed.

Honey market is fair to slow with dark honey meeting with some resistance from consumers. Beekeepers are asking if it is wise to blend honey. Is it best to sell our best white honey as such to those who desire it and offer the darker grades to those who will accept it at a lower retail price—the wholesale price being definitely lower?

Brood rearing in winter is highly favored by well informed beekeepers here. Availability of pollen and honey to the winter cluster results in normal colonies starting to raise brood in January. This young brood emerging in February and March replaces many of the bees which die normally through the winter, and results in a more vigorous colony for heavy spring brood rearing. Many beekeepers will feed soy bean flour beginning the last week in March or first week in April, so colonies will never be without protein for brood rearing in case cold or wet weather makes field work impossible. Since our clover honey flow may begin as early as

the first week in June and since it takes from eight to ten weeks for a colony to reach maximum strength, unless a colony makes good headway during April it cannot produce a maximum honey crop from clover.

Many beekeepers here have adopted the three brood chamber methods of swarm control. By reversing the lower and upper chamber at the right time, they report little trouble or labor in swarm control.—H. J. Rahmlow, Madison, Wisconsin.

MANITOBA, January 5

Weather: I have just checked back to the last Manitoba report which was written June 7. That was at the height of the g l o o m y s e a s o n. Packages were late. It was cold and cloudy. There seemed to be no end to queen supersedure. Fortunately July was a fine bright month and with a fair amount of sweet clover in many areas, we found that most of the beekeepers were able to smile again as the bees brought in a yield per colony almost normal for the last few years. At the end of July prospects looked good for an August flow. Unfortunately rain and cold cut the flow off completely and, although the weather brightened up in September, very little further nectar was brought in.

Condition of Bees: Warm weather carried on until the latter part of October. I noticed that good robust colonies which continued brood rearing late in the fall used up most of their pollen. If this condition was general it may lead to poorer colonies next spring. A questionnaire sent out this fall indicated that 27 percent of Manitoba's bees are being wintered. If anything this figure is a little high. Sugar rationing was removed in October a little late for winter feeding.

Honey Plants: 2,4-D is reducing the available dandelion and I suppose may eventually wipe out the mustard in this area. Mustard fills in with some nectar and pollen just before the clover flow starts. The marked trend here has been to reduce sweet clover and increase alfalfa. Although the facts are not too clear, alfalfa does not seem to give the yields obtained from sweet clover. Beekeepers noted with some satisfaction that sweet clover looked in good shape and seemed more plentiful this past fall.

Market: Honey was decontrolled last summer. The beekeepers had forgotten how to set a price for honey as price had been fixed by law for so long. Prior to removal of the crop the market was almost bare. Buyers were looking for honey. Most beekeepers didn't want to see the price increase more than two or three cents above the previous controlled price. In the confusion as to what the price should be beekeepers held back their honey. Buyers then began bidding for it. The result —in the July issue I quoted Manitoba No. 1 white, case of 48 1-lb. containers, $10.32. Present price, $20.25. Most of the honey moved out of the hands of the beekeepers at top prices. Maybe it will harm the industry in the future but no one can expect a beekeeper to say "No thanks, I can't take 35 cents a pound —it might harm the industry".

Miscellaneous: Manitoba beekeepers held a very successful convention in Winnipeg November 4 and 5. Star performer was Dr. C. L. Farrar of Madison, who gave two interesting talks on "Nosema" and "Two Queen System".

I was fortunate this year to be able to attend the convention of the Ontario Beekeepers' Association and the Canadian Beekeepers' Council. Many old acquaintances were renewed at the Ontario Convention. The Council meeting lasted four days. Thirteen different committees of Council members and invited assistants brought in various progress resolutions by which means real constructive business guidance can be given to the industry. The Council, as is fairly well known, consists of two beekeepers elected from each of the six provinces repsented. An annual meeting is held and committees carry on their various projects throughout the year. Finances are arranged through a voluntary levy on honey containers. Beekeepers through the Council can speak to governments and other agencies with a united voice. The possible assistance in the way of guidance to the industry is unlimit-

ed. Interprovincial differences are ironed out and a small group of beekeepers is continually going through an executive experience which will rebound to the benefit of the industry as a whole.—E. C. Martin, Provincial Apiarist, Winnipeg, Manitoba.

NEW YORK, January 10

Weather during September and October was excellent throughout most of New York for fall honey. Fairly good crops were gathered where there were plenty of aster and goldenrod sources. Second crop clover and alfalfa yielded well during part of August, and altogether there has been a sizeable honey crop produced in New York during 1947; probably the largest total crop since 1941 for the state as a whole.

Market conditions have been rather slow. Honey is being offered at a wide range of prices, most offerings along roadside stands ranging from $1.50 to $2.25 per 5-lb. pail. Notwithstanding Government limitation orders and other efforts to keep honey moving through its regular channels during the war, it was largely sold through large distributors where it was easily and quickly taken by the public as a wartime substitute for sugar. This resulted in a lot of users of honey not being able to secure their needs. Many outlets for honey were entirely neglected. Those customers are at least temporarily lost and it is going to take a lot of time to redevelop these markets.

Miscellaneous: Many New York beekeepers who have been trucking their bees to Florida for the winter and back here in the summer are struggling to adjust their operations to comply with the "Florida Exclusion Act". At the present time it seems that most of them contemplate the establishment of larger permanent holdings in Florida and hauling increase and packages to New York. While this is going to necessitate a larger capital investment and costs for summer care, the savings in transportation will probably more than offset these in a few years.

There are quite a few in this state who would like to set up retaliatory regulations which would virtually keep out all package bees as well as bees on combs. Experience of our inspection service would seem to justify such legislation, as many cases of AFB have been traced to packages coming from other states. Disease carried in packages, not being detectable for several weeks, is really more dangerous than bees on combs where disease can be readily discovered. Such an exclusion law by New York would greatly benefit a large majority of beekeepers in this state who keep rather stable their number of colonies, who do no migrating, who make their own increase when needed, and who never buy packages. This class of beekeepers are so in the majority that there is little doubt that they could get such a law adopted if they should start an organized movement to do so.

I believe that a minimum of regulations is desirable for the movement of goods and commerce between the states, be it bees or whatnot, that quarantine regulations should be used only for disease control and never used to establish trade barriers between states or communities. Otherwise, we will, by their improper use, gradually convert this great free nation into something like Europe. — Howard Myers, Ransomville, N. Y.

ONTARIO, January 6

Weather: For the past five or six weeks we have had normal winter in this part of Ontario with only three mornings to date registering sub-zero weather, about two to four degrees below zero.

Since December 1 the ground has been covered with snow continually and at present we have about ten inches on the level, with more or less drifting around fences, etc. While we have had no really severe weather, on the other hand, it has been steadily cold enough to prevent any stirring up of the bees, and entrances of hives

XUM

show little evidence so far of many dead bees being carried out.

In so far as we know, none of our bees had a flight later than about November 10, and of course that means an earlier close confinement than usual, as a year ago, if memory serves me rightly, when they had a flight during the first week in December. However, the older we get the less we are inclined to worry over these little discrepancies, as generally the law of averages works out all right—if an early fall is experienced we usually get an early spring to even up matters.

Honey appears to be moving rather slowly, judging by what they tell me at the chain store at our nearest town. With corn syrup being retailed at 15 cents per pound that is what we may expect when amber honey is being sold for 35 cents. While meats and many kinds of vegetables have taken a great jump lately, canned fruit, etc., have not as yet followed and are not likely to do so.

Prospects: As spring approaches we beekeepers are naturally thinking of the prospects of a crop in 1948, and nearly all interviewed express the same opinion. It is all a matter of pasture for the bees, which, unfortunately, appears to be getting less each succeeding year. Numerous reasons can be given, differing generally for individual districts governed by local conditions. For instance, near Toronto where we are situated, farming is of a very intensive nature and most farmers are supplying milk or other dairy products to the city. Naturally, growing alsike for seed which was formerly our great standby does not work well with dairying, and as a rule not too many have much permanent pasture to provide clover that will bloom to assist the bees.

Then up in Victoria County, where we have seven apiaries, shortage of farm labor is driving many to leave the farms for more lucrative work in the cities, and as a result, on five of the farms where we have bees the land is now all given over to pasture and workers are engaged in other work. After a few years of pasture with no reseeding, we find that the alsike that formerly covered this acreage kills out, leaving only native wild grass, that of course does not give any pasturage for the bees.

Miscellaneous: To screen or not to screen is a question to be decided by local conditions when moving bees, and the Editor quite rightly speaks of the danger of moving without screens, page 29, January issue. The writer has moved bees in every sort of vehicle from a wheelbarrow to carlots, and we used to enjoy the work and excitement entailed, but were always glad when each job was finished. Well do we remember moving a carload one hot night in June when our water supply gave out and the bees were in danger of suffocating. At every stop of the long freight train it was a case of gathering up pails of water from the ditch along the track that, fortunately for me, had been filled with a great downpour of rain earlier in the evening. We managed to save the bees all right by emptying the water barrel with a giant syringe and shooting it over the bees, but the writer was about "all in" physically when the train arrived at its destination in the morning. But we are glad to say that with the moving of hundreds of colonies at different times we have never lost a single colony nor had enough damage to amount to a dollar.—J. L. Byer, Markham, Ontario.

A. I. Root Gets a $20 Queen

"Well, as I had got the Italian queen fever I was bound to have one; $20 was a big price to pay for a single bee, as my friends expressed it, but I thought in this as in other things, the best was generally the cheapest and surest; and so goes away the $20 greenback with an anxiety and impatience for the result not equaled by any other transaction where several hundred were at stake.

"The days at length passed as days always do, I believe, and a reply came, and shortly after, the tiny movable frame hive, and the beautiful little strangers as kind and gentle as kittens"—From "Novice, No. 3, pages 216-217, May, 1867, ABJ.

Editorials

Snow Good for Clovers Snow usually melts slowly and moistens the soil gradually. Spring and summer rains are valuable but oftentimes they come in such downpours that only the top soil is moistened, much of the rain running off. When the snow comes late, as it did this past winter, the beekeepers are hopeful.

During recent years the water table over the country has been getting lower. Recent rains and snows over the country should help to raise this water table, bringing it nearer the top of the soil. This should help to insure better stands of clover and larger honey crops.

The Miracle of a Package When we realize that it is actually possible to put a package of bees and a laying queen into a hive in the spring, and with intelligent management and favorable conditions develop a populous colony of bees that will store a good crop of honey that same season—in some instances over 300 pounds, this is nothing short of a miracle.

The package, when received, may appear rather insignificant. If the day is cool the bees may be listless. However, there is, or should be, within that package, a queen whose main business is egg laying, destined to produce many thousands of worker bees, as well as some drones. Some of these worker bees eventually replace the bees that are shipped with the queen and take up various duties in the hive. Many others live long enough to become fielders that will bring in the precious sweet, then perhaps die, with frayed wings, exhausted at the close of a brief six or seven weeks of arduous labor—to be succeeded by future generations.

The business of producing and shipping package bees and queens is indeed interesting and very essential to our industry. The first article in this issue by R. C. Daniels will give the northern beekeepers who receive packages some idea of the painstaking effort and skill required to produce and ship bees and queens.

National Meeting at Salt Lake City The Annual meeting of the National Federation of Beekeepers' Associations held in Salt Lake City, Utah, on January 15 and 16, was well attended by close to 400 beekeepers from all parts of the U.S. and Canada. One of the outstanding features of the meeting was the sincerity of purpose with which the delegates attacked the problems now facing the industry.

A number of recommendations were made in the form of resolutions for the consideration of those present. One of these dealt with ways and means to raise funds in order that an industry-wide paid advertising program for honey can be started to supplement the fine work the American Honey Institute has been accomplishing in publicizing honey. Another resolution called attention to the problem of imported honey coming into the country, another with the disposal of strong flavored honey that seems difficult to move. These and a number of other resolutions will be reported in detail in the March issue.

While resolutions passed at a meeting do not in themselves solve problems, yet they do crystallize the thinking of those present and focus attention on the work at hand. If the industry is willing to back with money its two national organizations, the American Honey Institute and the National Federation of Beekeepers' Associations, it is reasonable to suppose that these resolutions can be put into action with much benefit to the industry as a whole.

Cellar Wintering Wintering bees in a cellar may have some advantages, as some beekeepers may conclude when they read the article "Comparing Notes on Wintering", by C. H. Pease, on page 78 of this issue.

During frigid weather when north winds do their worst to chill man and beast exposed to the elements, the bees tucked snugly in a properly constructed winter repository appear to be safe from the rigors of a severe winter.

XUM

In successful cellar wintering colonies must be populous in the fall and must have adequate stores of good quality. Poor quality or thin honey may cause dysentery. These same requirements are essential for successful outdoor wintering. However, bees wintered outside may and usually do get one or more cleansing winter flights unless it is in the far North where the temperature is too low during most of the winter for bees to fly.

There are some beekeepers in northern latitudes who winter bees in cellars but most beekeepers winter them outside. Our suggestion is to continue the method of wintering you are now using if it gives good results. If you choose to experiment with a different method of wintering, do so on a moderate scale and do not risk all of your colonies in an experiment that may not prove to be satisfactory.

What Sized Commercial Beekeeping Outfit?

Those who read the interesting feature article in the January 1948 Gleanings entitled "The Future of the Commercial Honey Industry", by Woodrow Miller, will recall that he said, "For the future I feel the most economical size of unit to run would be from 700 to 1500 colonies —as many as one beekeeper could take care of with one full-time helper and, of course, a harvesting crew during the summer".

Mr. Miller's opinion on this matter appears to be in line with the consensus of experienced and successful beekeepers over the country.

We have said and still say that a commercial beekeeper should not have more colonies of bees than he can operate successfully. Honey production is a seasonal business. The crop is oftimes harvested in less than a month, especially in clover regions where the major flow is heavy and of comparatively short duration.

To secure the maximum crop it is necessary that all equipment be in readiness to use at the proper time and that all colonies be up to maximum strength at the beginning of the main flow. This requires knowledge and experience, as well as the ability to adjust one's program to changing conditions and unforseen emergencies that may occur.

Some beekeepers seem to pride themselves in having a large number of hives of bees. There is a difference between hives of bees and real colonies of bees. One real colony of bees may actually store more surplus honey during the season than a dozen weak colonies of bees. It is surplus honey and wax that count in beekeeping.

There is a law in business that has to do with diminishing returns on over-expansion, and this seems to apply in commercial beekeeping. It isn't the number of hives of bees we have, but the amount of surplus honey and wax secured that counts in beekeeping.

Moisture Within Hives

We hear considerable these days about excess moisture in hives during the winter months. During the International Beekeeping Meeting held in Niagara Falls in 1941, C. B. Gooderham of Ottawa, in a talk said that some moisture in hives during winter may be beneficial. Bees require some water and if they can get it inside the hive they do not have to go outside for it.

Excess moisture is doubtless detrimental, especially in cold regions where bees do not have cleansing flights during the winter. Under such conditions dysentery may occur. To combat excessive moisture in hives during the winter, each colony must be populous and well supplied with stores of good quality, and it must have adequate protection against the elements. A small upper or top flight hole in each hive, in addition to a restricted bottom entrance, appears to be an advantage in that it helps to expell any excessive moisture that may accumulate.

Moving Colonies May Stimulate Activity

We have been told by some who practice migratory beekeeping that moving bees from one location to another tends to increase colony activity. Is it possible that hives of bees moved to a new location, when becoming oriented, search out sources of nectar and pollen not known to bees that are already in that particular locality?

One method of finding out would be to select two moderate sized apiaries about four or five miles apart, then exchange one-half of the hives in each yard, preferably quite early in the season before the main honey flow begins. Instead of taking all the hives from one side of each apiary it would seem preferable to take away every other hive, then replace these with every other hive from the other apiary. Sometimes bees drift to one side of a yard, especially if there are no trees, shrubs, or other objects in the apiary to help them find their own hives. By marking the hives moved and keeping tab on the amounts of honey stored by each group of colonies we should learn something. The experiment should perhaps be repeated for a number of years. We plan to try this experiment this coming season. If any of our readers try it, please report the results.

To Sell We Must Tell If each of us would canvas the homes on his street to find out how many people use honey regularly in their diet, he would doubtless be surprised to find a comparatively small percentage, possibly less than 5 percent. The fact that the large majority of people do not use honey in any form does not mean that honey is an inferior sweet, but rather that the majority of people have not been educated to using honey and perhaps do not realize that it is a superior sweet.

At the present time some beekeepers are bemoaning the fact that honey does not sell readily. A while back, when sugar was scarce, we had a buyers' market on honey. People bought it mainly because they had to have some sort of sweet and took honey because they knew something about it. This situation may have developed some new honey users. At present, when sugar, as well as other sweets such as preserves, jellies, and syrups are available in quantity, it goes without saying that the majority of people who know comparatively little about honey are not going to buy it in preference to other sweets unless they are convinced that it is worth the price asked for it and that it has some qualities other sweets do not have.

During the past two decades the **American Honey Institute** has been doing a marvelous job in honey publicity, contacting organizations handling foods, inducing them to include and advertise honey with their products, cooperating with home economics departments over the country to get honey tried out in various recipes, arranging radio broadcasts on honey, furnishing items for magazines and newspapers concerning the virtues of honey, sponsoring experiments to determine the vitamin content of honey, as well as inducing the medical fraternity to give honey the recognition it rightfully deserves. All this work has helped measureably to focus more attention on honey.

Using honey is largely a matter of education. A demand for honey cannot be created in a day. It may take years. When grapefruit was first introduced comparatively little was used. The producers of grapefruit kept right on advertising and today it is sold widely, especially for a breakfast menu.

It seems obvious that a national advertising campaign on honey should be undertaken, especially if the production of honey increases during the next few years. If each beekeeper in the United States could be induced to support such a program, the cost per beekeeper would be relatively small. If only a few beekeepers contribute, the cost would be more than they could bear because it takes money and plenty of it to finance a national advertising program.

Our readers will be interested to know that the **American Honey Institute** has already begun work on a new advertising program for honey. It is hoped from the modest beginning that will soon appear there will develop a lasting and effective advertising program.

The first advertising will probably be carried by the professional journals that will appeal to dietitians, home economists, hygienists, and teachers. These people are important for they can spread the word about honey even further.

The success of this program and the degree to which it can be expanded depends upon the support of every beekeeper in the industry and it is hoped each beekeeper will do his part. **To sell we must tell.**

XUM

80 Years Among the Bees

By E. R. Root

How A Man Who Made Many Mistakes Could Be One of Bee Culture's Greatest Benefactors

In my earlier chapters on the life of A. I. Root I told how he broke all records of his time by producing a barrel of honey from a single colony and 6000 lbs. from 48, and how he was so successful that he exhausted the capacity of all his jugs, jars, wash boilers, tubs, etc. (and those of his neighbors) to hold his crops. He seriously considered the idea of putting in a cistern to hold the honey, lining the walls with paraffin.

The bees were bringing in the honey. After Father had filled all of his containers he still needed more storage space so he conceived the idea of selling the surplus in small packages. He found that 3-lb. Mason jars were just about right for this purpose. He ran the honey through a strainer of cheesecloth into the jars, and asked 75c for 3 lbs. of honey, jar included. These went like hot cakes and he built up a real honey business in a short time.

The first lots of honey put up in these jars were unheated but the flavor was good, and for a while everything was fine. But in the light of present knowledge this was a serious mistake. That green unripened honey began to foam in the jars and run all over. It had not been fully capped over. Customers brought it back. He apologized then started over again. He extracted no honey unless it was fully capped over, and put it in jars as before, unheated. It tasted good and everything seemed to be fine. Then it began to granulate and customers again came back, this time accusing him of adulterating his honey with white sugar. He tried to explain that this was the tendency of all honey but that he would replace it, which he did, this time with honey that had been heated.

Here he ran into trouble again. He had no book of instructions. The honey was placed on a stove in wash boilers. He did not know that honey heated in this way would become overheated. Later he discovered that all honey had to be heated in a double boiler. So, with this outfit he started out once more but heated the honey too hot—above 160 degrees F. This darkened the honey and spoiled the flavor with the result that he nearly ruined his honey selling business.

Unfortunately, at the present time there are some beginners who fail to read their books of instructions wherein caution is given that honey should never be heated beyond 160 degrees, and better 130 or 140 degrees—and always in a double boiler. The instructions also caution against allowing the honey to remain hot, recommending that after it is placed in the jars it should be cooled immediately by setting them in cold water.

Dr. Phillips and others have said that much of the beginners' honey is not properly processed, no thermometer being used to test it while it is being heated, with the result that in most cases the temperature goes away above the danger point.

A. I. Root's early experience of spoiling his good honey was written by himself in the American Bee Journal and later in Gleanings in Bee Culture. He was one of the first to put up bottled honey in a commercial way.

In telling about these mistakes he did more to inform the beekeeping world what not to do than in relating those ventures which brought immediate success. His recitals of his mistakes were given with unblushing frankness which finally took on the form of little romances that were most interesting. I recall how one of his subscribers said, "I'm always anxious to get the next issue of Gleanings to see how gracefully A. I. can back down and tell how and why he made a mistake and how to do it better the next time".

Price of Honey

January 10, 1948

The following figures represent an expression of current prices from beekeepers and honey packers over the country. They are based on several reports from each state averaged with the reports in the region. Where insufficient information is returned prices have been omitted from the chart. Where three figures appear on the chart the first figure represents the low, the middle figure the average, and the third figure the high.

We shall be glad to have any one who desires to report for this column drop us a card and we will place your name on our list.

Prices of bulk honey seem to remain about the same as a month ago. Prices of packed table grade honey reported by large packers are slightly lower, particularly in the smaller containers. Most reports indicated sales are slow but a few reported good sales at average prices.

Monthly Honey Report (Prices expressed in cents per pound)

	North East	North Central	Mid West	South West
Bulk Honey				
Table Grade	18-20c	18-21-33c	16-20c	14-17-22c
Industrial Grade	15-18	12-16-18		12-15-19
Price to Grocers				
5 lb. jar or can	25-28-35	22-26-31	22-24-30	21-23-26
3 lb. jar (cs. 12's)	23-27-35	21-30		
2 lb. jar (cs. 12's)		27-30		25-28-34
1 lb. jar (cs. 24's)	28-32-38	28-31	25-28-30	27-30-34
Comb Honey (24's)	$9.00 to $10.75	$9 to $10	$7.20 to $9.00	$10.25
Retail Price				
60 lb. can	17-23-39	13-25-26	17-21-25	19-23-32
5 lb. jar	25-35-45	25-32-35	26-28-33	24-30-34
3 lb. jar	25-36-46	32-34-39		24-32-36
2 lb. jar	33-48	35-41		35-35-40
1 lb. jar	35-43-50	33-41-45	33-39-45	32-38-43
Honey Sales	Slow to Fair	Slow to Fair	Slow	Slow to Fair
Estimated Crop				
Conditions based on normal (%)	71		65	79

A TALK TO BEEKEEPERS

(Continued from page 85)

warm day I get around to my outapiaries to see if all the colonies are living. If there are any dead colonies, I plug up the entrances tightly to prevent bees in the yard from robbing the honey out of the hives in which the bees died.

A little later, when fruit bloom honey flow starts, I aim to check through all colonies carefully. If any hives are queenless, I put in new queens if the colonies are worth requeening. If I should find any AFB I dispose of it promptly.

If some colonies are below par in strength I give them a boost by putting in queenless packages of bees or equalizing the colonies in the same apiary. I haven't time to go into this matter further at present.

At least one super of combs is put on each strong colony during the dandelion and fruit bloom honey flow to give the colonies a chance to expand to prevent them from getting the swarming fever.

As the main honey flow is starting in early June (if it does actually start) I put on most of the supers I have, keeping ahead of the bees in the matter of supplying comb space, which means supers, a little before they actually need them.

After the main honey flow is over, I remove the filled supers, extract the honey, then store the supers away carefully, mouse-proof. In this locality, as already stated, there is usually a fall flow and some of these supers have to go back onto the hives again to catch the fall honey. There is usually no swarming problem during the fall flow. When it is over, the honey is removed and I make sure there is a great abundance of honey left for each colony during the winter. I plan to inspect all hives thoroughly for disease some time during September.

And so, successful beekeeping, which means securing a maximum crop of honey and wax at the minimum of expense, boils down to learning how to do the right thing at the right time and using good common sense in apiary management. Remember bees need three things: (1) a modern home in which to live, (2) plenty of comb space for honey and brood rearing, and (3) ample stores—honey and pollen.

Asked and Answered

Bees Flying Out on the Snow

Question.—Why do bees fly when snow is on the ground and die in the snow? I have seen them come out of the hive and fly off as far as I can see them and I don't think they can return on account of the cold. I have them packed with tar paper and straw between the hive and paper.—Mrs. Fred Christensen, Minnesota.

Answer. — Bees that fly out of hives during the winter months and die on the snow are likely to be old bees, born late last summer or early fall, that do not have sufficient vitality to live through the winter. The young vigorous bees that emerge from cells during the fall months are likely to live through the winter. It does not seem that you have cause for undue worry concerning the loss of the bees that fly out, unless perchance you are losing large numbers of bees during winter.

What Kind of Paint and What Sized Package

Question.—Which color is more preferable in this northern section to paint a hive—white or aluminum? Is a 2-lb. package of bees with queen sufficient to get one super of honey in an average year?—Jules Chicoine, Vermont.

Answer. — Aluminum paint, a good quality product, has been found quite satisfactory for beehives. It is necessary of course to have the surface of the hives dry before applying the paint. A 2-lb. package of bees with queen, if put into a hive rather early, sometime during April, in your locality, should, with the right kind of management, develop into a colony that would store a considerable amount of surplus honey the same season. We assume that your major honey flow would start the latter part of June and continue during the month of July. If you already have some hives of bees, it would be possible, during the second or third week after the package is installed, to take a comb of sealed brood, shaking all the bees from it, then put this into the middle of the hive containing the package. If you select a comb containing brood that is just beginning to emerge, all the better. These young bees will hatch out of the combs, then the queens will use these combs for laying eggs.

What to do with Thin Honey

Question.—I have some honey that is quite thin. What can I do to make it thicker?—W. J. Grindle, Maine.

Answer.—Your thin honey can be processed by placing the containers of honey in hot water, resting on small sticks so that water can circulate underneath. If you have a liquid thermometer you should use it and the honey should be brought to at least 160 degrees Fahrenheit for about 20 or 30 minutes, then cooled. This heating will tend to drive off the excess moisture in the honey. It would be an advantage to stir the honey while it is being heated. The heating of the honey will also destroy any yeasts that may be present that would cause fermentation. If you do not have a thermometer the water should be brought to almost a boil and the honey in the containers stirred periodically.

Can a Sugar Diabetic Use Honey Safely?

Question:—Can honey be safely used by a person who has sugar diabetes?—Mrs. Clair P. Green, N. J.

Answer:—We are often asked this question. Our answer is yes and no. Tupelo honey is high in levulose and low in dextrose. There are many who have a mild form of sugar diabetes who can eat tupelo honey with safety. On beginning the honey diet one should be very careful to use very little at the start to be sure sugar does not appear in the urine or blood. The average physician, not having experience with honey, will say that no sugar diabetic should take honey. We have had many reports from those who have lived on year after year, finding great relief in using honey high in levulose.

Introduction of Italian Queens into U.S.A.

Question.—About what time were Italian bees introduced into America?—S. W. Michener, Kentucky.

Answer.—The first importation of Italian bees into America was by Dzierzon in 1859, and later shipments were made by S. B. Parsons, Flushing, New York, in 1860. Then followed an importation by F. Mahan of Philadelphia in 1863.

Buy and Sell Here

CLASSIFIED ADS

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate:—12c per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month preceding.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Manufacturers of Bee Supplies, Onsted, Michigan.

LIGHT AMBER HONEY in 60's. Sample, 10c. Joseph Fekel, Vineland, N. J.

FOR SALE—Comb honey, case or carrier. L. F. Howden, Fillmore, N. Y.

BEST GRADE HONEY FOR SALE—in large quantities, 25c lb. in your containers. E. R. Raley, Box 1610, Daytona Beach, Fla.

FOR SALE—Amber extracted, mild flavor, new cans, $12.00. N. B. Querin, Bellevue, Ohio.

HONEY SALE—Carload lots or less, clover, buckwheat, heartsease, basswood, or alfalfa. Box 3522, care Gleanings in Bee Culture, Medina, Ohio.

FINE QUALITY Northern N. Y. White Clover Honey in 60's at honey house, not cased, at 20c. Cased and F.O.B., 21c on ten case lots or more. Sample, 20c. A. J. Wilson, Hammond, N. Y.

FOR SALE—100,000 lbs. Ebv's Wisconsin clover honey, $15.15 F.O.B. W. Elkton, in 60-lb. tins. Also available in 1 to 5 lb. glass. Beekeepers take notice—do not let your trade lapse — this is a fine flavor white honey—the kind of honey you will be proud to supply your customers. Alan Eby, West Elkton, Ohio.

FOR SALE — Honey, desirable grade, packed in new 60-lb. cans. Carload lots or less. On U. S. Hiway 30. Russell D. Smalley, Beaver, Iowa.

CLOVER HONEY, truckload. Sueper Apiaries, Webster City, Iowa.

CLOVER extracted honey, 60-lb. cans, $15.00 per can, F.O.B. Medina, Ohio. Irvin VanDevier.

FOR SALE—Extracted honey in 60's. Comb honey by case or carriers. C. W. Schrader, Waterville, N. Y.

40 60-lb. cans clover and buckwheat mixed honey for sale. Best offer will take it. The Victor Apiaries, Belleville, Mich.

SWEET CLOVER-ALFALFA honey in new sixties Irvin Klaassen, Whitewater, Kansas.

700 NEW 60's fine quality light colored honey. Write for details. Burghardt Apiaries, 1111 North Franklin St., New Ulm, Minnesota.

FOR SALE—Fancy clover extracted, water white, 18c per lb. Lose Brothers, 204-206 E. Jefferson St., Louisville, Ky.

OHIO delicious extracted white clover honey. Sixty-pound cans, $15.00, also in 10 and 5 lb. pails. Melrose Apiary, Delphos, Ohio.

FOR SALE—Light comb honey by case. Sweet clover extracted in sixties. Abram H. Brubaker, Lancaster, Rt. 1, Pa.

EXTRA FINE white clover honey, 60-lb. tins, 20c per pound. Obert Knutson, Harmony, Minnesota.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We can not guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

WANTED—EXTRACTED HONEY—Clover or light amber. C. H. Denny, 483 Moody St., Akron, Ohio.

WANTED — White and amber honey, any amount. D. F. Treap, 316 Keenan Ave. Cuyahoga Falls, Ohio.

HONEY & BEESWAX — Highest prices paid. Mail samples . Advise quantity. BRYANT & SAWYER, LOS ANGELES 21, CALIFORNIA.

CASH FOR YOUR HONEY—Extracted or comb. Regular trade, send sample. 60-lb. cans furnished, if desired. W. R. Moomaw, Stone Creek, Ohio.

HONEY WANTED—All grades and varieties. Highest cash prices paid. Mail samples. State quantity. HAMILTON & COMPANY, 1360 Produce St., Los Angeles, Calif.

ALL GRADES of white and amber honey wanted. Carloads or less. Mail sample and price. Alexander Company, 819 Reynolds Rd., Toledo, Ohio.

WANTED—Clover extracted and comb honey. Any quantity. State price in first letter. C. Jankowski, Prairie View, Ills.

WANTED — Light extracted honey in 60's. Clover preferred. J. Jones, 115 W. 82nd St., New York 24, N. Y.

HONEY WANTED—All grades. Carloads or less. Mail sample and price. Also need beeswax badly and will pay top prices. Alexander Company, 819 Reynolds Road, Toledo, Ohio.

SHIP US YOUR WAX on a cash, working, or a trade basis. Write for shipping tags and prices. Walter T. Kelley Co., Paducah, Kentucky.

FOR SALE

GOOD USED 8 frame supplies, 10 frame beeway. Sueper Apiaries, Webster City, Iowa.

QUEENBEE PAINTING OUTFIT, $1.00; colony records, 10-15c postpaid. Southwick Apiaries, Waban, Mass.

WRITE FOR LOW CASH price glass jars and 5-lb. tin pails. Complete stock. Prompt shipment. Roscoe F. Wixson, Dundee, N. Y.

HONEY LABELS

Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.

C. W. AEPPLER COMPANY

Oconomowoc, Wisconsin

Root Quality Bee Supplies

We have them.
Write for price list.
Save time. Save money.

A. I. Root Company
OF INDIANAPOLIS
121 N. Alabama St.
Indianapolis 4, Indiana

Root QUALITY

BEE SUPPLIES

also

Michigan's Most Complete Stock Honey Containers for Extracted, Section, and Cut Comb Honey

Write for price lists and discount rates

For top returns produce Section or Bulk Comb in 1948

M. J. BECK CO.

510 N. Cedar St. Box 7
Lansing 1, Mich.

HONEY WANTED

Carloads and less than carloads. M il sample and best prices in all grades.

C. W. AEPPLER COMPANY

Oconomowoc, Wisconsin

Pure Northern maple syrup in 5-gallon or 1-gallon containers at $5.85 a gallon. The Alexander Company, 819 Reynolds Road, Toledo, Ohio.

WRITE FOR CATALOG — Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies, Onsted, Mich.

TRUCK, nearly new (6500 miles) two ton 1947 Ford cab and chassis, 158 inch wheelbase, two speed axle, booster brakes, 8.25 inch tires. Sell at cost $2000 cash. Reason for selling: now using army truck. William Coggshall, Ludlowville, N. Y.

SIMPLEX TRAP clips queens without handling. $1.75 postpaid. INSTANT FRAME SPACERS, seven-eight-nine. Specify size. $1.50 postpaid. Free circulars. George Leys, 36 Jackson Street, New Rochelle, N. Y.

300 lbs. foundation, and 500 bee frames. Harold L. McDaniel, Polson, Montana.

FOR SALE—Like new Root bee equipment for 25 colonies. Drawn combs. Alan Boardman, Route 1, Downers Grove, Ill.

150 new shallow extracting supers, assembled and painted. Clarence Engle, Kearneysville, W. Va.

HONEY—Filtered and packaged in any size containers, 3 cents per lb. Michigan's finest honey processing plant. Prairie View Honey Co., 12303 12th St., Detriot 6, Michigan.

Honey house, storage house, two-room residence. Ideal set-up for someone who has bees. Located Northwestern Minnesota. Reasonable. Box 2482, care Gleanings, Medina, Ohio.

YOUR WAX WORKED into high quality Weed process medium brood foundation for 22 cents per pound; 100 pounds, $18.00. Fred Peterson, Alden, Iowa.

PERFECT DOVETAILING MACHINE with proper motor, in good condition for making dovetail bee hives and equipment. Machine like new. $135. Mrs. Everett Shelhamer, Churubusco, Ind., Rt. 1.

ANDERPOLL, a pollen substitute. Improved formula of soybean-cotton seed meals with dried milk and yeast plus vitamins and minerals. Guaranteed. 4 lbs., east of Mississippi, $1.25; west, $1.40. Bruce Anderson, 1500 Eads Street, Arlington, Va.

FASTEN HIVES securely with Burt's Hive Lock—no nails, lath, or staples. Durable, efficient, inexpensive. Top strap and lock, $1.50; with lower strap, $1.75, postpaid; or write for descriptive circular. John D. Burt, Newberg, Oregon.

NEW! Hubbard's "Xtra-Tuf" Brood Foundation is by far the strongest foundation on the market. Send for circular describing its many points of superiority. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies, Onsted, Michigan.

FOR SALE — 900 new supers with frames. Super depth 7¼ inches, nine frames in standard 10-frame width. Made by Lewis. Very handy size for extracting. Sterling Johnson, Lovell, Wyo.

FOR SALE—Standard 8 and 10-frame bee hives. Number 1's, $1.05 each. Hoffman frames, $8.00 per 100. Four cleat covers, 80c each. Bottom boards, 80c each, KD and F.O.B. factory. Write for catalog. Satisfaction guaranteed. HAGEN - LUNCEFORD MFG. & SUPPLY, 2500 North Fourth St., Coeur D'Alene, Idaho.

Equipment for operating 600 colonies, can furnish honey house, dwelling, truck if desired. Equipment 10-frame size. Will accept any size order. One to three thousand full-depth supers, 9 drawn combs, $2 each. Also have chunk and shallows for sale. Purchaser must furnish bees. Harold Gilbert, Sheridan, Wyoming.

FOR SALE—VOHO Entrance Closures! They save you valuable time, your bees, and your equipment. VOHO Entrance Closures securely screen an entrance in less than three seconds. VOHO Entrance Closures automatically lock into position when placed in the entrances. There are 12 distinct occasions when VOHO Entrance Closures will facilitate your beekeeping operations. VOHO Entrance Closures allow maximum ventilation with the least disturbance to the bees. Write for quantity prices and facts about these amazing new aids to beekeeping. Priced to sell—Upper, $0.80;—Lower, $1.30; Satisfaction guaranteed. VOHO PRODUCTS, 2916 Orange St., Norfolk 2, Va.

BEES AND QUEENS FOR SALE

We use all possible care in accepting advertisements, but we cannot be held responsible in case disease appears among bees sold or dissatisfaction occurs. We suggest that prospective buyers ask for certificate of inspection as a matter of precaution.

GOOD ITALIAN QUEENS, $1.00 each. D. W. HOWELL, Shellman, Georgia.

PACKAGE BEES AND QUEENS. Three band Italians, 26 years' experience. Circular free. Crenshaw County Apiaries, Rutledge, Ala.

BOOKING PACKAGE BEES with Caucasian Queen for spring delivery. Write Miller & Evans, Three Rivers, Texas, Rt. 1.

CAUCASIAN QUEENS and Package Bees. Booking orders for 1948. 2-lb. packages, $5.00; 3-lb. packages, $6.00; queens, untested, $1.50. Lewis & Tillery Bee Co., Rt. 1, Box 280, Greenville, Ala.

BREWER'S LINE - BRED CAUCASIAN QUEENS—Now booking for April delivery. 30c deposit on each queen at time of booking. No package bees. Brewer Brothers Apiaries, 3616 Caucasian Circle, Tampa 6, Florida.

LANGE'S ITALIAN QUEENS give the best in satisfaction. Write for prices and open dates. Lange Apiaries, Rt. 2, Box 23W, Mission, Texas.

ITALIAN queens and package bees. Two pound pkg. with queen, $3.50; three pound pkg. with queen, $4.50; Queens, each, $1.05. Walter D. Leverette, Box 364, Fort Pierce, Fla.

THE NORMA ROY APIARIES—Italian bees, 2 pounds with queen, $4.25; 3 pounds with queen, $5.00. Queenless packages, deduct $1.00 per package. Book your order now. No down payment required. Live delivery and health certificate. Norma E. Roy & Son, Hessmer, Louisiana.

FOR SALE—40 years in bees, I am now offering to sell 400 colonies of bees in the best locations in Iowa. State inspected. Honey-plant cabin. Ask for particulars. Joe C. Weaver, Rt. 3, Box 423, Springfield, Mo.

FOR SALE—90 colonies bees, 10-frame two-story heavy with honey. 400 deep supers drawn comb. Other equipment. State inspection. Honey Bee Farm, Hoopeston, Ill., R.R. 1.

TANQUARY'S
Cypress Bee Supplies

Now that good cypress lumber is available we can furnish you hives, covers, bottoms, supers, empty bodies, frames. Also 3-hole queen cages.
Let us quote you on your needs. Prompt shipments.

Tanquary Honey Farms
INC.
Lena, South Carolina

ELK MOUNTAIN
POLLEN SUPPLEMENT

is a scientifically BLENDED BEE FOOD compounded specifically to furnish the BEES and BROOD with a VITAMIN ENRICHED substitute for NATURE'S own POLLEN. Send $1.00 for a postpaid trial bag with feeding instructions.

THE BEES LOVE IT.
Elk Mountain Products Company
P.O. Box 233 Carbondale, Pa.

Italian Package Bees and Queens for 1948

	1-25	26-up
2 lb. pkg. with queen	$4.65	$4.50
3 lb. pkg. with queen	5.50	5.25
4 lb. pkg. with queen	6.50	6.25
5 lb. pkg. with queen	7.50	7.25

Health certificate
Prompt shipment
Live arrival guaranteed

B. J. Bordelon Apiaries
Moreauville, La.

Package
BEES and QUEENS

Bred for Quality and Honey Gathering
Our Bees Have Produced
Where Others Have Failed
Prices for 1948:

	Queens	2 lb. pkg.	3 lbs.	4 lbs.
1-24	$1.40	$4.50	$5.85	$7.20
25-99	1.30	4.25	5.55	6.85
100-up	1.20	4.00	5.25	6.50

You get Better Breed Queens, Overweight Packages, Baby Bees, and Prompt Delivery of every order.
Telephone: 2546 Livingston, Ala.
Telegraph: Livingston, Ala.
Our Motto: "Once a customer always a customer".

C. W. BAKER
Sumterville, Ala.

Finest Quality
Queens & Package Bees
All shipped in new cages
2-lb. package with queen, $4.50
3-lb. package with queen, 5.50
Each additional lb., $1.00 each
Untested Queens:
1 to 25, ... $1.25 each
25 to 50 ..... 1.20 each
50-up ..... 1.15 each
Health certificate with every order
Alamance Bee Company
Graham, N. C.
Geo. E. Curtis, Mgr.

1948 Packages Bees & Queens

They Cost No More The Best Kind You Can Buy

Bright 3-Banded Italians
— You Can Count On Us —

Again for QUALITY, FULL WEIGHT LIGHT CAGES, YOUNG BEES, CHOICE QUEENS. Safe arrival, satisfaction in U.S.A. and Canada. Health certificate furnished.

Prices of package bees with queens:

	2 lb.	3 lb.	Ex. Qns.
1-24	$4.50	$5.75	$1.30
25 to 100	4.25	5.50	1.25

Package Bees F.O.B. Express
If by parcel post Add Postage

Norman Bros. Apiaries
Ramer, Ala.

Package Bees for 1948

2 lb. with queen $4.50
3 lb. with queen 5.70
Queen 1.50

25% to book the order.
Add 50c per package for lots of less than 20.

Eugene Walker
Gridley, California

FOR SALE—650 colonies, two story, $16.00, with locations, Jefferson Co., N. Y. Health certificate furnished. Made 70 tons since 1945. Extra supers, $4.00; shallows, $2.50. Will also sell land, buildings, equipment. Reason for selling, business in Florida. E. Gamble, Box 259G, Route 6, So. Jacksonville, Fla.

A GOOD RULE TO GO BY, buy your bees and queens from Alabama Apiaries, Uriah, Ala.

BOOKING orders for Northern bred Italian queens, $1.10. Dates open June 1st on. William I. Gray, Prospect, Pennsylvania.

FOR SALE—Three pounds certified Italian bees with young queen, four fifty, shipped after May fifteenth. Gallberry extracted honey, six five-pound jars, nine dollars. Pure Georgia sugar cane syrup, six half gallon jars, six dollars. Certified sweet potato and tomato plants. Two hundred ten-frame colonies certified for package shipping, standard painted equipment, young fall queens on early spring locations. VALDOSTA HONEY CO., Valdosta, Georgia.

GOLDEN ITALIAN PACKAGE BEES AND QUEENS, the best we can raise. 2-lb. with queen, $4.50; 3-lb. with queen, $5.50 Select untested queens, $1.25 each. Carolina Bee Farm, W. O. Curtis, Mgr., Graham, N. C.

THREE BANDED ITALIAN bees and queens for April and May. All packages with queens: 2 lb., 1-24, $4.50; 25-99, $4.25; 100-up, $4.00. 3 lb., $5.85, $5.55, $5.25 respectively. Extra queens, $1.50, $1.30, and $1.20 respectively. Inspection certificate furnished. Write for further information. Cottage Hill Apiaries, Rt. 2, Mobile, Ala.

FOR SALE: Bees and equipment. Woodman 50-frame extractor; 3 100-gal. tanks; 250 colonies; 850 supers with frames and lots of others. Reasonable. Inspection certificate will be furnished. Steve Zupko, 4463 23rd, Wyandotte, Michigan.

FOR SALE—Bees, state inspected. Gerald Dawson, 16192 Evergreen, East Detroit, Michigan.

600 colonies bees requeened 1947 in lots of 100 or more. 10-frame honey supers with bees if desired. Inspection certificate furnished. Complete list of equipment on request. NORTHERN MICHIGAN APIARIES, Petoskey, Michigan.

235 colonies, equipment for 150 colonies; honey house, apartment, 50-frame extractor, equipment. Inspection offered. Also location. Strickler Brothers, Route 2, Pascagoula, Mississippi.

FOR SALE: Complete 400 hive 8-frame migratory outfit ready to go. Plenty of good equipment. Certificate furnished. $5000 cash. Albert Allred, Madera, Calif.

MUST SELL—500 colonies bees on locations. Will pay for themselves in two seasons at price asked. Inspection certificate furnished. W. A. Nelson, Box 382, Imperial, Calif.

FOR SALE—750 colonies, Inch Apiaries located Canada, County Northumberland, Province Ontario. Excellent locations. 16 apiaries with all equipment. Can accommodate 900. Disease free. Sell going concern or detail. Hector Inch, Port Hope, Ontario, Canada.

FOR SALE: 60 good colonies of bees, plenty of honey, good equipment. Inspection certificate furnished. William Shawler, 616 South 8th Street, Council Bluffs, Iowa.

FOR SALE—350 bee moving screens to fit top of 10-frame hives. Screen made of heavy galvanized steel, 7½ mesh to the inch, mounted on heavy wooden frameword, painted with cupinol oil. Reinforced across center. Price each $1.50, F.O.B. Fredonia. Cloverdale Apiaries, Fredonia, New York,

BEES WANTED

WANTED—50 to 75 colonies bees, 2-story preferred. April, early May. Fred Russell, Chelmsford, Mass.

WANTED—Two to four hundred hives of bees with locations in Western Colorado. A. C. Besgrove, 1926 East Whittier Blvd., Whittier, California.

WANT TO BUY or lease an apiary in South Arkansas or one of Gulf States. Alva Rock, Wallace, Kansas.

WILL LEASE 1000 colonies with plenty supers on share basis. Man to furnish labor and truck. Arthur Allen, Highland, Kansas.

BEEKEEPERS' COURSE

At long last! May 10, through 15, 1948, six full-day course in beekeeping in the apiary by the South's leading authorities on Swarm Control; Queen Rearing; Queen Introduction; Package Bee Installation; Hive Manipulation; Honey Grading and Packing; Making Increases; Disease Diagnosis and Control; Moving Pictures each night on Practical Beekeeping in the South. For full information address L. C. Dotson, 207 Haas-Howell Bldg., Atlanta, Georgia.

HELP WANTED

WANTED — Experienced queen yard man. Year around employment in yards and shop. We can furnish a good modern home to live in. Give full information, age, experience, and salary expected in first letter. H. C. Short, Fitzpatrick, Ala.

EXPERIENCED and inexperienced help needed in package bee production for the 1948 season. Also queen breeder. Year around job for right parties. F. E. Morrison, Rt. 2, Box 103, Auburn, Calif.

HELP WANTED, preferably experienced, beginning next April in 1200-colony outfit. Give complete qualifications, personal habits, and wages expected. William L. Coggshall, Ludlowville, New York.

WANTED — Capable bee man for extracted honey production. Country man preferred. Season, April 1-Nov. 15. Board, room furnished. Give full particulars. Lavern Depew, Auburn, New York.

WANTED—Strong young man to work with bees, opportunity for advancement. Give weight, height, references in first letter. C. H. Schader, Sunnyside, Washington.

WANTED: Experienced man for permanent job; leasing outfit a possibility. Give full particulars as to experience and references. W. W. Likely, Silverton, Idaho.

OPPORTUNITY for qualified veteran to learn commercial beekeeping under G.I. Program. For particulars write Holzberlein Honey House, Grand Valley, Colorado.

WANTED—Experienced queen breeder and package beemen for our apiaries. Only honest, reliable men considered, no boozers. Give full information, age, experience, and salary expected in first letter. Good opportunity for right parties. YORK BEE COMPANY, JESUP, GEORGIA.

Queens, A Specialty
Leather Colored Italians
Order now for April and May shipments. Our queens are especially bred to resist extreme winters.
Prices for the United States and Canada:

1-50	$1.50
51-99	1.35
100-up	1.25

For foreign orders add 15% more.
Small orders—Cash in full with order
Quantity orders—25% deposit with order
"Not a store-bought queen, but a country-raised one, The Nature Way"
O. K. Anderson & Son Apiaries
Box 193
Coffee Springs, Alabama, U.S.A.

THE JOHN M. DAVIS STRAIN
ITALIAN QUEENS
BRED THE DAVIS WAY
Guaranteed to please

Untested	$1.25 each
Tested	2.00 each
After June 30th,	1.00 each

Untested only
Cash with order
Little's Apiaries
P. O. Box 122
Shelbyville, Tennessee
Where Quality Reigns

10,000 Eby's
Package Bees
3-lb.—$5.00 each, any number. Booking orders now for early delivery. 10% with order, balance before delivery.
Good honey producing strain Italians.
Highland Apiaries
Sylvester, Georgia.

Italian Package
Bees and Queens
Of Highest Quality
Prompt shipments
Live delivery guaranteed
Bennett Bee Farms
1504 N. Main St., Hattiesburg, Miss.

XUM

WHITTLE'S

Leather Colored Italians

Book your order Now for 1948

1948 Packages with Queen:

	2 lbs.	3 lbs.	4 lbs.
1-24	$4.50	$5.85	$7.20
24-99	4.25	5.55	6.85
100-up	4.00	5.25	6.50

Our Bees and Service will Please You

G. E. WHITTLE
Star Route West
Greenville, Alabama

DIXIELAND'S

Leather-Colored Italians
Package Bees and Queens

Booking dates open in April and May

	Queens	2-lbs.	3-lbs.	4-lbs.
1-24	$1.40	$4.50	$5.85	$7.20
25-99	1.30	4.25	5.55	6.85
100-up	1.20	4.00	5.25	6.50

Dixieland Apiaries

Greenville, Alabama

Announcement
Italian Queens

From my past experience with the bees I have decided to make a lifetime career in a queen yard. All orders will be greatly appreciated. You will be rewarded with the best in quality and service.

Prices for shipments beginning April 1, 1948:

1-25	26-99	100-up
$1.40	$1.25	$1.20

Address until April 1, 1948:
University of Alabama, General Delivery, University, Ala, U.S.A.
Address after April 1, 1948:
Samson, Alabama, U.S.A.

(Miss) Lenora Anderson

ITALIANS
Bees and Queens for 1948
Dark three-banded strain that are good producers.

2 lb. Pkg. with queen	$3.95
3 lb. Pkg. with queen	4.95
Extra Queens	1.15

$1.00 deposit required on each package booked.
A. M. PEACH
Baldwyn, Miss.

HELP WANTED—Experienced or with some experience for immediate full time employment at good wages. Give full information including experience and references. Elton Lane & Son, Trumansburg, N. Y.

WANTED—Several helpers in our apiaries for the coming season from April till November. State age, experience, and wages expected in first letter. Oscar H. Schmidt, Rt. 4, Bay City, Mich.

WANTED—Two men to work in our apiaries and packing plant. Opportunity for advancement. Schultz Honey Farms, Ripon, Wisconsin.

HELP WANTED—Preferably experienced, beginning next April. Give complete qualification, personal habits, and wages expected. Room and board furnished. B. B. Coggshall & Son, Groton, N. Y.

SUPPLIES

ATTENTION BEEKEEPERS IN MINNESOTA and adjacent states. We offer a real service on Lewis-Dadant Bee Supplies, honey containers, and labels at a price saving to you. Top market price paid for extracted honey and beeswax. HONEY SALES COMPANY, 1806-08 NORTH WASHINGTON AVE., MINNEAPOLIS 11, MINN.

POLLEN SUBSTITUTES

SOYBEAN FLOUR—(Expeller processed) 12-lb. bag, $1.80; 24-lb. bag, $2.90; 100-lb. bag, $9.50. DRIED BREWERS YEAST—(Animal), 1 to 25 lbs., $0.35 per lb., 25-lb. bag, $6.25; 100-lb. bag, $19.50. Please allow for postage if by parcel post. Free instructions for using with your order. HONEY SALES COMPANY, 1806-08 NO. WASHINGTON AVE., MINNEAPOLIS, MINNESOTA.

TURKEYS

RAISE TURKEYS THE NEW WAY. Write for free information explaining how to make up to $3000 in your own back yard. Address: NATIONAL TURKEY INSTITUTE, Dept. 253, Columbus, Kansas.

MAGAZINES

THE BEE WORLD—The leading journal of Great Britain and the only international bee review in existance. Specializes in the world's news in both science and practice of apiculture. Specimen copy post free. 12 cents stamps. Membership in the Club including a subscription to the paper, 10/6. The Apis Club, L. Illingsworth, The Way's End, Foxton, Royston, Herts, England.

WESTERN CANADA BEEKEEPER—official organ of the Manitoba Beekeepers' Association. One year, $1.00; in combination with one year's subscription to Gleanings in Bee Culture, $2.25. 206 Donalda Bldg., Winnipeg, Canada.

THE INDIAN BEE JOURNAL—The only bee journal in India. Sample copy against 25 cents (1s 6d.) postage stamp. Yearly, 7s, 6d, ($1.50) International Money Order. Apply Bhupen Apiaries, (Himalayas) Ramgarrh, Dist Naini Tal, U. P. India.

Read the South African Bee Journal to be conversant with conditions from far afield. Subscription /5 per year. For further particulars, write the Hon. Treasurer, E. E. A. Leach, Box 57, East Rand P. O. Transvaal, South Africa.

SEEDS

HARDY ALFALFA, U.S. GROWN, $15 per bushel; Hardy Grimm $19.20; Scarified Sweet Clover $9.65; New Timothy $3.30; Timothy and Alsike Mixed $6.50; New Strain Brome $3.45; Hybrid Seed Corn, tested, $4.75. Prices low on Red Clover, Lespedeza, Alsike; Clinton, Mindo and Benton Oats, etc. Our seeds recleaned, tested, Guaranteed satisfactory and sold subject to your 60-day test. Write for Free Samples and 1948 catalog. Hurry, scarcities exist. AMERICAN FIELD SEED CO., Dept. 382, Chicago 9, Illinois.

NEW CROP SWEET CLOVER, scarified $9.60; unhulled $4.80; Red Clover, contains some other crop seeds, $23.50; Hardy Alfalfa $14.70; Grimm Alfalfa $18.90; New Timothy $3.25; Alsike and Timothy $6.30; New Strain Brome $3.40. All per bushel triple recleaned. Low prices on Red Clover, Alsike, Lespedeza, and others. Hybrid Corn $4.75. Guaranteed satisfactory. Free samples—catalog. CHARLES SINN, Box 482, Clarinda, Iowa.

NECTAR AND POLLEN YIELDING TREES, SHRUBS, and PLANTS for your section. Write for our descriptive illustrated Folder and order items wanted before being sold. Shipping all winter. NICOLLET COUNTY NURSERY, St. Peter, Minn.

MAKE UNUSED LAND YIELD NECTAR. PURPLE LOOSETRIFE, good honey plant, grows on wet land; seed per ounce (40,000 seeds), $1.00; ¼ pound, $3.00; pound, $8.00. GOLDEN HONEY PLANT, grows in the woods, 2 ounces, $1.00; ½ pound, $3.00. CATNIP, long blooming period, ounce, $1.00; ¼ pound, $3.00. CHAPMAN HONEY PLANT, easy to grow, ½ pound, $1.00; 3 pounds, $5.00. LESPEDEZA BICOLOR, ½ pound, $1.50. ANISE HYSSOP, blooms from June until frost, ounce, $2.00; ¼ pound, $5.00. All postpaid. Packets of any, 20c each. Circular on request. Pellett Gardens, Atlantic, Iowa.

NEED A HOBBY? Raise a BEE GARDEN. One packet each of twelve good honey plants for $2.00 postpaid. Free honey plant circular. Pellett Gardens, Atlantic, Iowa.

Send for free literature describing the new Pellett Clover which spreads rapidly by underground root system. Long lived, good honey plant. Pellett Gardens, Atlantic, Iowa.

ANGORA GOATS

INTERESTED in Angora Goats? Read the Sheep and Goat Raiser, Hotel Cactus, San Angelo, Texas, the only ranch magazine published serving the Angora Goat industry. Subscription—$1.50. Sample copy—15 cents.

MISCELLANEOUS

JOHNSON'S Mechanical Device for applying paste to labels, fast and efficient, 55c each, postpaid. Dealers write for prices. JOHNSON'S Smoker Cane made of steel. Just stick cane in ground, slip smoker off as needed. Fits all standard sized smokers, $1.00 each postpaid. JOHNSON'S Pick-up beekeeper's wheelbarrow. Picks 'em up and sets 'em down. Wheel them up a plank onto a truck. Has large rubber tire. Send for circular. Paul W. Johson, Route 2, Peru, Indiana.

Bread and Butter Queens

HOLLOPETER reared Northern bred-for-business strain Italians. Young laying queens, May 20-June 20, $1.25; June 20-November 20, $1.00.

White Pine Bee Farms
Rockton, Pa.
Gleanings Advertisers Since 1911

Bees and Queens

Italians - Causasians and Daughters of Queens
Bred for Resistance
Over 30 Years a Shipper
Send for FREE Circulars

BLUE BONNET APIARIES
Weslaco, R 2, Box 23, Texas.

Italian Bees and Queens

Two and three frame nuclei. We have good rail connections to all northern points. We begin shipping April first. Will trade for some foundation or new bee supplies.

Walker Apiaries
Box 894 Pharr, Texas

Now booking orders for 1948
Leather Colored Italian Queens
and Package Bees

Write for Prices

LYNN WILLIAMS
Rt. 3 Oroville, Calif.

Queens of the Golden West

Buy Western-bred queens and package bees for best results. We are now booking orders for spring 1948.

CLIFTON APIARIES
Oroville, Box 684, California

Italian Queens and Package Bees

We are now booking orders for 1948 delivery, only 20% with order, balance 10 days before shipping date. We guarantee live delivery and health certificate with each shipment.

Prices as follows:

2 lb. pkg. with queen	$4.00
3 lb. pkg. with queen	5.00
4 lb. pkg. with queen	6.00

Clover Bee Farms
HESSMER, LA.

Edward C. Hanson Robert L. Hanson

Hanson, Hall Bee Co., Livingston, La.

Producers and Shippers of

Thorobred Italian Bees and Queens

We still have some attractive dates open . . . .

	Queens	2 lb.	3 lb.
1-24	$1.40	$4.50	$5.85
25-99	1.30	4.25	5.55
100-up	1.20	4.00	5.25

We are small enough to appreciate your order for a single package and large enough to accept your order for a thousand.

Yellow Italian

Package Bees & Queens

Now is the time to have your name put on our books. 10% will reserve your desired shipping date. Later might be too late. Health certificate with each shipment. Live delivery guaranteed. We start shipping in early April.

2 lbs. with young laying queen:

1 to 24	$4.25
25 to 49	4.15
50 up	4.00

3 lbs. with young laying queen:

1 to 24	$5.25
25 to 49	5.15
50 up	5.00

Queens, May delivery: $1.25 each; 50 up, $1.10 each.

Plauche Bee Farm
Hamburg, La.

Bright Italian Bees

We are not booked up yet with package orders so we can still take on more orders. Place your orders now before shipping starts and be on time. We have been shipping the bright 3-banded bees for 27 years. We guarantee State health certificate, safe arrival, and satisfaction. All packages F.O.B. Express.

2 lb. pkg. with young queen, $4.25 ea.
3 lb. pkg. with young queen, 5.50 ea.
4 lb. pkg. with young queen, 6.50 ea.
Young laying Queens $1.25 ea.

Norman Bee Co.
Ramer, Alabama.

ITALIAN BEES AND QUEENS

We are booking orders for Spring, 1948. Only 20% with order, balance ten (10) days before shipping date. Prices as follows

2-lb. package with queens, $4.00
3-lb. package with queens, 5.00
4-lb. package with queens, 6.00

THE STAR BEE FARM
Hessmer, La.

Look for this Sign
When You Want
QUALITY AT LOW COST

Trade Mk. Reg. U. S. Pat. Off.
KELLEY — "The Bee Man"

NEW CATALOGUE

1948 catalogue soon ready listing many new items not found in other bee supply catalogues. Larger stocks and better service than in the past 6 years.

Walter T. Kelley Co., Paducah, Ky.

Italian Package

Bees and Queens

for 1948

For Choice Shipping Dates Place Your Order Now

Each Package With Young Laying Queen

	1-24	25-49	50-99	100-up
3 lb.	$5.50	$5.35	$5.20	$5.00
2 lb.	4.50	4.35	4.20	4.00

For Queenless Packages Deduct $1.25

Send $1.00 per package to book your order and hold shipping date. Balance due not less than 10 days before shipment is made. Deposits promptly refunded if order is cancelled 10 days prior to shipping date. Health certificate with each order. Live delivery guaranteed.

Quality does not cost—It pays

The Wilbanks Apiaries
Claxton, Georgia

Italian Package Bees and Queens for 1948

	1-29	30-98	99-up
2 lbs. with queen	$4.30	$4.15	$4.00
3 lbs. with queen	5.30	5.15	5.00
Extra queens	1.35	1.30	1.25

For queenless packages deduct the price of the queen.

Package prices are f.o.b. Tifton, Ga. Queens only are postpaid.

Terms: $1.00 deposit per package when the order is booked and the remainder is due 10 days prior to shipping. Cancellations are in order at any time prior to shipping and deposits will be promptly returned.

Girardeau Apiaries
Tifton, Georgia

Package Bees and Queens

High Producing Italians

Prices for 1948:

2 lb. package with queen

1 to 24 .....$4.50
25 to 99 ..... 4.25
100 up 4.00

3 lb. package with queen

1 to 24 .....$5.85
25 to 99 ..... 5.55
100 up 5.25

Queens

1 to 24 .....$1.40
25 to 99 ..... 1.30
100 up 1.20

Geo. A. Hummer & Sons
Established 1892
Prairie Point, Mississippi

PACKAGE BEES AND QUEENS

Leather Colored Italians Bred for Production

Prices of Package Bees and Queens:

Lots of:	2 lb.	3 lb.	Ex. Queen
1 to 24	$4.00	$5.00	$1.25
25 to 99	3.85	4.80	1.10
100 or more	3.75	4.70	1.10

Terms 25% deposit to book order, balance ten days before shipping date. We replace any bees that die in transit if it's our fault. If it is the carriers' fault, file claim with them. We start shipping February 1. Old customers will be given preference.

The Island Apiary
Collier City, Fla.

ITALIAN
Package Bees and Queens
Certified, hardy and dependable

	1-24	25-99	100-up
2-lb. pkg.	$4.50	$4.25	$4.00
3-lb. pkg.	5.85	5.55	5.25
Queens	1.40	1.30	1.20

Live delivery guaranteed

Port Gibson Apiaries
Port Gibson, Miss.

GASPARD'S
Quality Italian Queens and Package Bees

We are booking orders for spring 1948 delivery. Only 20% with order, balance 10 days before shipping time. We guarantee live arrival, and health certificate accompanies each shipment. Prices as follows:

	1-49	50-up
2 lb. pkg. with queen	$4.25	$4.00
3 lb. pkg. with queen	5.25	5.00
4 lb. pkg. with queen	6.25	6.00
5 lb. pkg. with queen	7.25	7.00

Queens $1.35

Gaspard Bee Company
Hessmer, La.

OLDEST BEE JOURNAL IN THE ENGLISH LANGUAGE
Keep up on markets, practices, scientific data, regulations, and plant possibilities. 1 year—$1.50; 3 years—$3.00 U. S. and Canada. Foreign postage 25c a year extra.
AMERICAN BEE JOURNAL
Hamilton, Illinois

Package Bees and Queens
Caucasian and Italian Cross
Bred for Honey Production

All packages headed by young queens bred from carefully selected stock tested in our northern honey producing yards and all queens are **reared in standard three-frame nuclei,** assuring you of a queen that will produce a crop.

— Satisfaction Guaranteed —

5000 3-lb. pkgs. at the following prices:
3-lb. pkg. with queen (each), 1-9, $5.65; 10-49, $5.40; 50-99, $5.30; 100-up, $5.15.

20% to book order—balance 10 days prior to shipment.

Innanen Apiaries
Member Sioux Honey Assn.
Sioux Rapids, Iowa.
Northern Branch

Vicksburg, Miss.
Shipping point and southern address

Protect your future.
Buy U. S. Bonds now.

QUEENS **PACKAGES**
3-Banded Italian
Assure Early Delivery — 10% Books Order
Prices as follows:

	1 to 25	26-up
2-lb. and Young Laying Queen	$4.50	$4.25
3-lb. and Young Laying Queen	5.65	5.40
4-lb. and Young Laying Queen	6.80	6.55
QUEENS (Postpaid)	1.25	1.15

Queenless packages, subtract price of queen

Efficient - Rapid - Honest Service

Eells Honey & Bee Co., Houma, La., U.S.A.
"In the Sunny South"

POLLEN SUBSTITUTES

	5-lb.	10-lb.	25-lb.	50-lb.	100-lb.
Brewer's Yeast and Soy Flour Expeller Mixed	$.75	$1.50	$3.25	$6.00	$11.00
Brewery Yeast	1.50	2.75	5.50	8.50	16.00
Soy Flour		1.50	2.75	4.75	8.50
Skim Milk suitable for use by humans	1.00	1.75	3.75	7.50	14.00

Brewer's Yeast, Soy Flour (Expeller), mixed with cane sugar and water ready for feeding in cake form—$2.00 (10-lb.) can.
Include postage if you wish it sent by parcel post. Allow 2 pounds for packaging.
All prices collect, Bainbridge, N. Y.
M. Y. S. COMPANY, Bainbridge, N. Y.

TANQUARY'S

ITALIAN BEES AND QUEENS

We are headed out for the heaviest package and queens season that we have ever seen.

For good strong colonies and good crops Use TANQUARY'S Bees and queens.

Bee Wise — Order Early

	1 to 5	6 to 49	50 to 99	100-up
2-lb. packages bees with queens	$4.50	$4.35	$4.20	$4.00
3-lb. packages bees with queens	5.65	5.50	5.25	5.00
4-lb. packages bees with queens	6.75	6.50	6.25	6.00
5-lb. packages bees with queens	7.75	7.50	7.25	7.00
Queens (Postpaid)	1.35	1.30	1.25	1.20
Tested Queens, any number				2.00

Queenless packages, deduct $1.20 per package
Queens clipped at no extra cost

For booking send $1.00 per package and 30c per queen, balance 10 days before shipment is made. Health certificate with each shipment.

Remember Tanquary's Bees and Queens Do the Job

Tanquary Honey Farms, Inc., Lena, S. C.

Southern Beekeeper
(Magazine)
HAPEVILLE, GA.
"Southern in scope—
National in influence"

Italian Queens
The finest that you can buy. A trial order will convince you. Satisfaction guaranteed and safe arrival. 10% books your order, balance 10 days before shipping date.
Price Queens ..... $1.15 each
Write for prices on package bees
Bayou Bee Company
Rt. 1, Box 49, Montegut, La.

Canada's
National Monthly Magazine
for Beekeepers
Canadian Bee Journal
54 Bloor St., W., Toronto 5, Ont.
U. S. Subscription Price,
only $1.25 per year

G. B. Lewis Wooden Goods!
Dadant's Famous
Crimp wired Foundation
Catalogue on request
Italian Package Bees and Queens,
April and May.
No deposit required
Dotson's Apiaries
3059 W. Roxboro Road, NE
Atlanta, Georgia

The Beekeepers' Magazine
3110 Piper Road, Lansing 15, Mich.
$2.00 per Year
Serving the Honey Producers of America Since 1938
We'd like to mail you a sample copy.
Drop us a card today.

Modern Beekeeping
The picture magazine of beekeeping. We show you with pictures how to do the job easier, quicker, and better. Special inventor's page.
One year, $1.00. Free sample copy.
Modern Beekeeping
Paducah, Kentucky

PACKAGE BEES FOR 1948

File Orders Early for Spring Shipments
Now Booking Orders for Earliest Shipping Dates
All orders for more than two packages SHOULD BE FOR MULTIPLES OF THREE, to make even crates.
All orders should be accompanied by payment of $1.00 PER PACKAGE to confirm and hold shipping date, balance payable before shipping.

PRICES, Quantity Scale:	1 to 9	12 to 48	51 to 99	102-up
2-lb. Pkg. with queen	ea. $4.50	ea. $4.25	ea. $4.15	ea. $4.00
3-lb. Pkg. with queen	ea. 5.65	ea. 5.40	ea. 5.30	ea. 5.15
4-lb. Pkg. with queen	ea. 6.80	ea. 6.55	ea. 6.45	ea. 6.30

Extra Queens, Untested, $1.25, any quantity,
—Tested, $2.00, any quantity.
For queenless packages, deduct $1.25. Loose queen type (late shipment only) add $1.00.

All deposits will be refunded if order is cancelled for any reason.
Above prices will hold unless cost of sugar is materially increased.

The Puett Company Hahira, Ga.

GOOCH'S ITALIAN QUEENS

15,000 Queens will be ready for shipment to YOU in the early Spring. Bright Yellow and 3-Banded Italians—EACH THE DAUGHTER OF A QUEEN THAT HAS PRODUCED 300 OR MORE POUNDS SURPLUS HONEY IN ONE SEASON, AND MATED TO DRONES OF EQUAL QUALITY.

In Lots of:	1-10	11-49	50-100
Queens Each	$1.40	$1.30	$1.15

Live delivery guaranteed. Health certificate furnished with each order.
PROFITABLE BEEKEEPING BEGINS WITH GOOCH'S QUEENS.
Jesse E. Gooch & Sons, Route 3, Pine Bluff, Ark.

Italians or Caucasians

Over a quarter of a century in the same place, in the same business.

	1 to 5	6 or more
2-lb. package with young queen	$4.25 each	$4.00 each
3-lb. package with young queen	5.25 each	5.00 each

My motto: I will expect to do business with you again.
H. E. GRAHAM - - - - Cameron, Texas

1948
Package Bees and Queens

Prices:	1-49	50-99	100-up
2 lb. with queen	$4.50	$4.25	$4.00
3 lb. with queen	5.75	5.50	5.00
Queens	1.35	1.25	1.00

Above prices will hold unless price of sugar is materially increased.
Homan Bros.
R. 2 Shannon, Miss.

QUEENS ITALIAN QUEENS
Northern Raised —— Northern Bred
These HARDY SELECTED QUEENS are from heavy honey producing stock and no BETTER QUEENS are produced. Booking orders now. June 1st to Nov. 1st. Each $1.50. Cash with order. Air mail service.
Baker's Apiaries
Glencoe Illinois

When You Buy Bees
What Do You Look For?

QUALITY: Which means a good strain of Bees, good Queens, full weight young Bees, light cages.

SERVICE: Handling your order in a businesslike manner, shipping your bees and queens on time, if humanly possible; giving especial attention to any claims and making prompt adjustments.

RELIABILITY: There is a lot of satisfaction in dealing with a firm that has specialized in package bees and queens for well over a quarter of a century, knowing that your interest is our interest, and that you keep us in business.

We are ready to serve you in 1948. Bees are in good shape, cages are almost ready.

1948 Prices Through May 20th:

	ITALIAN			CAUCASIAN	
	Queens	2 lb.	3 lb.	4 lb.	5 lb.
1-24	$1.40	$4.50	$5.85	$7.20	$8.55
25-99	1.30	4.25	5.55	6.85	8.15
100-up	1.20	4.00	5.25	6.50	7.75

Queenless Package — Deduct Price of Queen

The Stover Apiaries

Mayhew, Mississippi

Three-Band Italian Package Bees

Full weight, prompt shipment, young bees. State health certificate with each shipment. Live arrival guaranteed. Replacement or refund made promptly upon receipt of bad order from your express agent.

Prices for 1948 with young laying queens:

Lots of	Queens	2-lb.	3-lb.	4-lb.	5-lb.
1 to 29	$1.25	$4.25	$5.40	$6.55	$7.70
30 or more		4.00	5.00	6.00	7.00

If queenless packages are wanted, deduct $1.25 each from above prices. For queens introduced add $1.00 to the price of each.

Jackson Apiaries

Funston, Georgia

XUM

Although inflationary prices are still troublesome to us all, I would rather use this small space to tell you of the good things that 1948 brings that were not good during very recent years.

First, the war's end released men who are now going on their third year of employment with us. Yes, we have a full complement of trained employees. For the past two years we have been devoting considerable time and material to experimental projects with a view to making The Daniels Apiaries as modern in every detail as is possible. The results of these experimental projects have brought about a great host of improvements and they will reflect to our patrons advantage to give you greater value per dollar invested and greater pleasure.

TERMS: Small orders, cash in full. Large orders, 20 percent deposit, balance to be received two weeks before shipping date. U.S. funds. A 10 percent discount is allowed on package bees if shipment is to be made after May 20th. A 20 percent discount is allowed on queens if shipment is to be made after May 20th, and a 30 percent discount is allowed on queens to be shipped after June 1st.

1948 - 1947 PRICES

Lot	Queens	2 lb.	3 lb.	4 lb.	5 lb.
1-5	$1.55	$4.75	$6.00	$7.25	$8.50
5-15	1.50	4.65	5.90	7.15	8.40
15-25	1.40	4.50	5.75	7.00	8.25
25-up	1.35	4.40	5.65	6.90	8.15

One of the World's leading strains of Light Colored Italians

The Daniels Apiaries Picayune, Miss.

ITALIAN

Bees and Queens

• • • Quality

• • • Service

• • • Reliability

1948 Prices

	1-24	25-99	100-up
2-lb.	$4.50	$4.25	$4.00
3-lb.	5.85	5.55	5.25
4-lb.	7.20	6.85	6.50
5-lb.	8.55	8.15	7.75
Queens	1.40	1.30	1.20

Merrill Bee Co.

State Line, Miss.

Mississippi's Oldest Shipper

Start Right! with

Dexter's Quality-Bred Italians

a high honey producing strain

This year — when honey prices are high—it will pay you to start with the best three-frame nuclei you can buy.

Dexter's nuclei each contain three frames filled with brood, pollen, and honey well covered with young worker bees, and a young laying queen.

The three-frame nuclei are shipped in light wooden boxes with screen on two sides.

Try three-frame nuclei this year. Compare them with combless packages. See if they don't keep a well-balanced bee population, require less attention, build up quicker, and produce more honey than any other type of package.

3-frame nuclei with young laying queen, $5.50 each.

Terms: Small orders, cash in full. Larger orders, 20% deposit, balance due two weeks before shipping date.

Leon F. Dexter

Myrtle Beach, South Carolina

Above photo shows a part of one of our queen yards containing over 10,000 nuclei

1948 Italian Bees and Young Queens 1948

PRICES—WITH QUANTITY DISCOUNTS

	1 to 9	10 to 49	50 to 99	100 and up
2 lb. pkg. with queen (each)	$4.50	$4.25	$4.15	$4.00
3 lb. pkg. with queen (each)	5.65	5.40	5.30	5.15
4 lb. pkg. with queen (each)	6.80	6.55	6.45	6.30

Queens (each) $1.35 Tested $2.00

No order too large—none too small to be appreciated

Overbey Apiaries, Bunkie, La.

STOP ! !

HAVE you thought?

DO you realize the time is near?

PACKAGE BEES will be moving north in the near future. Will your order be among them on the date you desire?

For Package Bees to be moved on schedule we have been planning and working since last May Now your part in this plan is to place your order early for our—

OVERWEIGHT packages with young mated queens from mothers selected for production and gentleness.

1948 PRICES

2-lb. package with young mated queen, $4.30

3-lb. package with young mated queen, 5.50

10% deposit with order. Balance 10 days before shipping date.
All orders acknowledged at once
Place your order today

Rossman & Long

P.O. Box 133, Moultrie, Ga.

1948 Package Bees with Queens

Italians

Prices:

	1-9	10-49	50-99	100-up
2 lb. pkg. w. q.	$4.50	$4.25	$4.15	$4.00
3 lb. pkg. w. q.	5.65	5.40	5.30	5.15
4 lb. pkg. w. q.	6.80	6.55	6.45	6.30

Queens, each, $1.35; Tested, $2.00.

By Express

We Serve to Serve Again

Sunny South Apiaries

I. Clark, Prop.

Marksville, La.

XUM

Garon's Package Bees and Queens

Three-Banded Italian Stock of Superlative Quality and Daughters of TESTED A.F.B. Resistant Linebred Hybrid Stock
The product of many years of specialized work by trained vocational apiculturists.
Queen Daughters of this stock are isolation mated to drones of TESTED A.F.B. resistant mothers.
Bred for heavy production, moderate temper, and other desirable characteristics.

Prices: Three-Banded Italian Package Bees and Queens	1-9	10-24	25-99	100-up
2-lb. with queen	$4.40	$4.25	$4.15	$4.00
3-lb. with queen	5.55	5.35	5.25	5.10
4-lb. with queen	6.70	6.50	6.40	6.30
Queens	1.35	1.30	1.25	1.20
For Resistant Queens with or without packages, add the following extra charges:	.30	.25	.20	.20

Full Weight Packages - Light Weight Containers - Prompt Shipment

Garon Bee Company **Donaldsonville, La.**

Ephardt Honey Farms

Rt. 2 **Batchelor, Louisiana**

Package Bees with Carniolan Queens

April and May Delivery by Express

2 lbs. bees, young laying CARNIOLAN QUEEN $4.50
3 lbs. bees, young laying CARNIOLAN QUEEN 5.50
Extra CARNIOLAN QUEENS 1.35

We offer 4000 packages, 10,000 queens

Bessonet's Italian Bees and Queens

The demand again exceeds our supply this year, so we are unable to accept large orders for shipment before May 10th. Small orders considered during April. Prices are as follows:

	Queens	2 lb. Pkgs.	3 lb. Pkgs.
1-24	$1.40	$4.50	$5.85
25-99	1.30	4.25	5.55
100-up	1.20	4.00	5.25

BESSONET BEE COMPANY
Donaldsonville, Louisiana

Package Bees With Young Queens
ITALIANS

1948 **1948**

Prices
2 lb. package with queen $4.50
3 lb. package with queen 5.65
Extra queens 1.35

Write for quantity discount. $1.00 per package books your order, balance 10 days before shipping. Health certificate, live delivery, SATISFACTION.

Bozone Apiaries **Waynesboro, Miss.**

NOSEMA LOSSES IN PACKAGE BEES

(Continued from page 75)

fort should be made to stock nuclei with only young bees and to provide them with brood. Each queen should be allowed to lay sufficient eggs to assure more or less continuous emergence of young bees. To accomplish this, somewhat larger nucleus hives may have to be substituted for the usual "baby" nucleus. Attendant bees for queen cages should be taken from a colony so manipulated as to free it of the older bees rather than from the nuclei.

Colonies operated for package bee production should be managed so that brood rearing will be maintained at a high level. Packages filled by shaking the bees from brood combs onto a queen excluder in the top of an open-type funnel probably will contain fewer infected bees than when the deep-type funnel is used. The older bees tend to fly off of the excluder, whereas the younger bees crawl through and can be shaken into the package. The smoke-up method now in general use includes both old and young bees indiscriminately and may result in a high Nosema infection.

Other operating factors will contribute to variations in Nosema infections among bees shipped from any one source. The degree of infection is not necessarily uniform among the colonies in an apiary. The weather conditions at the time of shaking influence the percentage of field bees that may be away from the hive. Colonies that have been shaken one or more times probably will contain fewer old bees. The shaking method employed will affect the subsequent balance between the old and young age groups. The honey flow conditions prior to and during the shaking season appear important. Nosema - infected bees manifest the crawling symptoms at the beginning of a heavy honey flow. The weak, infected bees presumably are unable to handle large quantities of nectar, and are therefore lost more rapidly from the hive than at any other time.—12-11-46.

Literature Cited

Farrar, C. L. 1942. Nosema disease contributes to winter losses and queen supersedure. Gleanings in Bee Culture. 70 (11) : 660-1, 701.

Farrar, C. L. 1944. Nosema disease. Gleanings in Bee Culture. 72 (1) : 8-9, 35.

Farrar, C. L., and C. W. Schaefer. 1939. A preliminary report on the influence of stock on supersedure, or loss, of queen bees. U.S. Bur. Ent. and Plant Quar. E-473.

JENSEN'S

"Magnolia State" Strain

Italian Package Bees and Queens

With improved facilities and increased production plans put into action, we are enabled to accept some additional orders for May delivery, after the 10th especially.

Everything, including ideal winter weather, points to maximum output of Jensen's Package Bees and Queens in 1948. In fact, indications at this time are it will be the biggest year yet. But if you still haven't placed your order we suggest you do so very soon to avoid disappointment.

Prices:	1-24	25-99	100-up
2 lbs. with queen	$4.50	$4.25	$4.00
3 lbs. with queen	5.85	5.55	5.25
Queens	1.40	1.30	1.20

Jensen's Apiaries

Macon, Mississippi

The Business QUALITY Built

CAUCASIANS
CARNIOLANS

We have queen yards located in favorable locations in Hendry Co., southern Florida. Expect to have queens latter part of February on. Some packages March and April. Ask for prices.

Albert G. Hann, LaBelle, Florida.
Box 4115

ITALIAN BEES AND QUEENS

We are now booking orders for Spring of 1948.. Only 20% with orders, balance 10 days before shipping date. We also guarantee live arrival, and health certificate accompanies each shipment.

Prices as follows:	1-49 pkg.	50-up
2 lb. pkg. with queen	$4.25	$4.00
3 lb. pkg. with queen	5.25	5.00
4 lb. pkg. with queen	6.25	6.00
5 lb. pkg. with queen	7.25	7.00

Gremillion Apiary, Hessmer, La.

Protect your future.
Buy U. S. Bonds now.

York's Package Bees and Queens for 1948

Quality Bred Italians

The Strain Preferred by Leading Honey Producers

Package Bees with Young Laying Queens

	1 to 2	3 to 27	30 to 99	102-up
2-lb. Pkgs.	$4.65 ea.	$4.50 ea.	$4.25 ea.	$4.00 ea.
3-lb. Pkgs.	5.85 ea.	5.65 ea.	5.40 ea.	5.15 ea.
Extra Queens	1.50 ea.	1.45 ea.	1.40 ea.	1.35 ea.

Queenless Packages, deduct $1.15 per package.

If convenient, small orders cash, larger orders $1.00 deposit per package to insure order, and balance not less than two weeks prior to shipping date. We recommend 3-lb. packages as best all-around size. Shipping will begin as early in spring as weather conditions will permit, usually about first week of April. Book your order now; do not delay as demand is expected to be heavy.

York Bee Co. Jesup, Georgia, U.S.A.

(The Universal Apiaries)

QUEENS Fall Queens a Specialty QUEENS

You send the order; I have the queens

LEATHER COLORED ITALIAN QUEENS

MIDDLE TENNESSEE APIARIES

1 to 25, $1.35; 26 and up, $1.20—From Imported Strains.

¼ books orders. Balance before shipping. All queens clipped and by mail at no extra cost. (All queens after June 15, $1.00)

J. B. TATE & SON

1029 No. 4th St., Nashville 7, Tennessee. Tel. No. 34509M

1948 Prices on Package Bees and Queens from Disease Resistant Stock

	1 to 9	10 to 49	50 to 99	100-up
2 lb. Pkgs. with Queens	$5.20 ea.	$5.00 ea.	$4.75 ea.	$4.65 ea.
3 lb. Pkgs. with Queens	6.20 ea.	6.00 ea.	5.85 ea.	5.75 ea.
Queens	1.65 ea.	1.50 ea.	1.40 ea.	1.35 ea.

Iowa Beekeepers' Association

State House Des Moines, Iowa

Receiving ORDERS for the 1948 season and REPEAT ORDERS from the 1947 season.

Membership not restricted to Iowa

COMPARING NOTES ON WINTERING

(Continued from page 80)

tractor. I weigh every can (deducting 2½ pounds for the can) and know what my crop is to within a quarter of a pound.

Whether one winters outside or in a cellar, leaves honey for food or feeds sugar syrup, winters in packing cases, double-walled hives, or no packing, after all, if "the proof of the pudding is in the eating", is not the proof of the beekeeping in the results obtained and the crop harvested?

Finally, Brother Heacock, take a day off, follow Horace Greeley's advice: "Go West, young man, go West" as far as Canaan, and we'll make a tour of inspection through a bee cellar where bees don't "roar and buzz".

Canaan, Conn.

Plant's

3-Banded Italians

Shipped on time in new, light weight cages. State health Certificate with each shipment. Live, full weight arrival.

	1-24	25-99	100-up
2-lb. pkg. w. queen	$4.50	$4.25	$4.00
3-lb. pkg. w. queen	5.75	5.50	5.25
4-lb. pkg. w. queen	7.00	6.75	6.50

Queens $1.25 each, any quantity

20% holds shipping date
Balance two weeks before shipping.

Packages F.O.B.
Queens postpaid

W. E. Plant
Rt. 2, Hattiesburg, Miss.

Protect your future. Buy your extra Savings Bonds Now.

Queens **SUNKIST** **Packages**
Italian
We have some late March packages to offer
Also we have other openings, especially in late May

	1-25	25-up
2-lbs. with queen	$4.25	$4.00
3-lbs. with queen	5.25	5.00
4-lbs. with queen	6.25	6.00
Extra Queens	1.25	1.00

Sunkist Bee Company, Convent, La.

Rich's Leather Italian
Package Bees and Queens

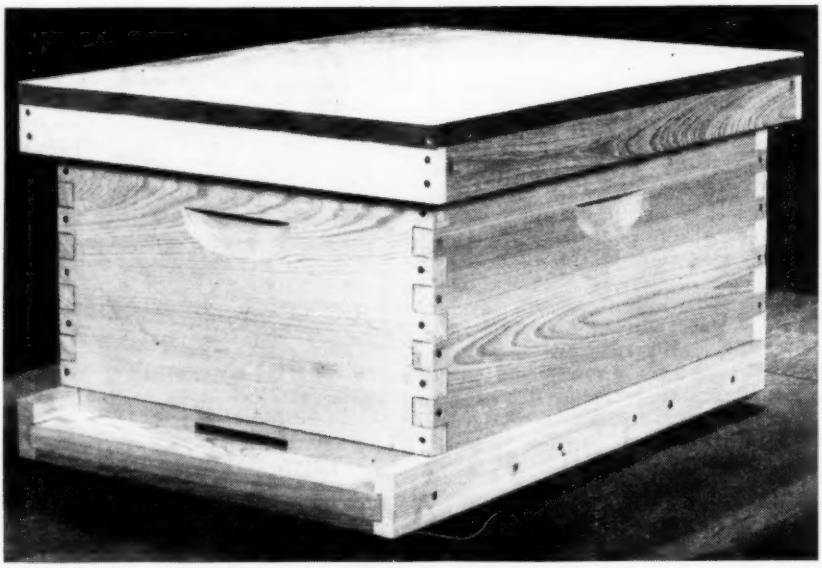
We guarantee every queen that is shipped to be mated and of proven laying ability, also that there is no gentler or higher producing stock available.

Prices: From April 1st to June 1st.	Queens	2 lbs.	3 lbs.	4 lbs.
1-24	$1.40	$4.50	$5.85	$7.20
25-99	1.30	4.25	5.55	6.85
100-up	1.20	4.00	5.25	6.50

We are also happy to announce that we will have available May 15th queens from the finest disease resistant stock yet developed. They compare very favorably with the gentle temper of our proven regular stock. Their honey gathering ability is also equal to the best that we have to offer. All queens up to May 15th are sold out.

Add 30c per queen when ordering disease resistant stock

The Rich Honey Farms Jeanerette, La.



BABCOCK'S

New Durabilt Equipment

--CYPRESS, the wood Everlasting
--ALUMINUM, the lifetime metal
--WORKMANSHIP unsurpassed

Write for FREE 1948 CATALOG

* * * * *

BABCOCK HONEY COMPANY

803 Sumter Street Columbia, S. C.

1948

BABCOCK'S

Production Bred Italian Bees and Queens

Now booking orders for April and May shipment

We offer several thousand four frame nuclei, each containing four combs filled with brood, pollen, and honey; a young laying Italian queen, and two pounds of young worker bees.

We have shipped these nuclei into every part of the country and our customers report they build up quicker, store more honey, and require less attention than any other type package.

These nuclei are sold only in lots of two or multiples of two, and are shipped two nuclei in a single ten frame hive body, partitioned in the middle and screened top and bottom.

One third down books order and choice of shipping dates; balance due ten days before shipment. Orders may be canceled any time before shipping date, with refund in full. Certificate of inspection and live delivery guaranteed.

Price: Two, four, six, or ten nuclei ..... $7.50 each
Over ten nuclei ..... 7.20 each

Durabilt Equipment

METAL COVERS, telescoping on all four sides, complete with nails and pure aluminum covering, 5 for ..	$6.75
BOTTOM BOARDS, standard reversible type, made from 100 percent pure cypress, 5 for	4.90
HIVE BODIES, complete with 10 Standard G. B. Lewis divided bottom bar frames, aluminum frame rests, nails and handholds on four sides, 5 for	10.75
HIVE BODIES, complete as above, without frames, 5 for	6.25
STANDARD TEN FRAME HIVES, complete with telescoping metal covers, hive bodies, bottom boards, and divided bottom bar frames. No inner covers. 5 for	23.00

All equipment is furnished in ten frame size unless otherwise specified

BABCOCK HONEY COMPANY

803 Sumter Street Columbia, S. C.

XUM

NEW DESIGN

ELECTRIC UNCAPPING KNIFE

$12.00

110-130V AC ONLY

- **THERMOSTAT CONTROL**
- **EVEN TEMPERATURE**
- **FASTER OPERATING**
- **LIGHT WEIGHT**

Macy Electric Knife Company
INC.
1239 S. Lorena St. Los Angeles 23, Calif.

Better-Bred Queens 3-Banded Italians

Our Better-Bred Stock has proved its merits. We are constantly trying to make it better and better. Our 20 years' experience will give you quality, service, and responsibility. We have plenty of bees. Number of open shipping dates April 1st to 12th, also later.

1948 prices through May 20th.

	Queens	2 lb.	3 lb.	4 lb.
1-24	$1.40	$4.50	$5.85	$7.20
25-99	1.30	4.25	5.55	6.85
100-up	1.20	4.00	5.25	6.50

Calvert Apiaries Calvert, Alabama

S P E E D

Pat. Applied For
"A Honey of a Moneymaker"

SPEED in the extracting house is cash in your pocket. The rapidity with which the DIAMOND LINE SPINNER will permit uncapping to be done by fast, deep cutting without sacrificing quality of honey, thereby shortening time combs remain in extractor, will increase honey output 10 to 20 cans per day. STREAMLINE your honey house **now** by installing the polished stainless steel DIAMOND LINE SPINNER. The Diamond Match Company, pioneers in the use of stainless steel in the manufacture of honey extracting and wax reduction equipment, will soon present other units of ultra-modern design. Our next introduction will be an entirely **automatic** 8-frame extractor embodying many new engineering features. **Watch for it!**
The DIAMOND LINE SPINNER is compact, 30" x 30". Shipping weight 230 lbs. Priced complete with motor, ready for instant operation, at $225.00 F.O.B.

The Diamond Match Company
Apiary Division
1300 Produce Street, Chico,
Los angeles 21, Calif. or California
Producers of quality beehives and supplies of California Sugar and Ponderosa Pine.
Write for complete Catalog.

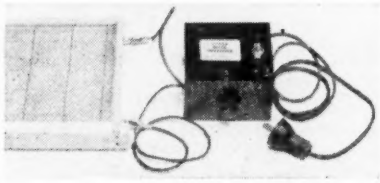
IT'S A GOOD IDEA

This time of year to gather up all your old comb and cappings and have them rendered into beeswax before the wax moths consume any part of it. We charge only 2c lb. for rendering when your old comb or cappings weigh 100 lbs. or more (net), 3c on smaller shipments. We are buying clean beeswax today at 43c lb. delivered.

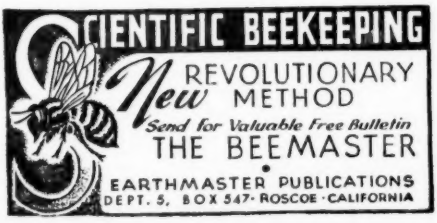
We are always buying honey. Send SAMPLE, state how much you have, and quote your best price. We remit promptly for honey and wax shipments.

Send for our Money Saving Price List on bee supplies.

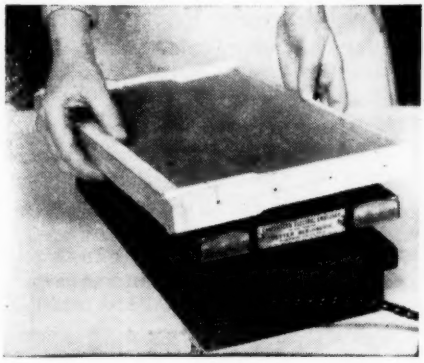
THE FRED W. MUTH CO.
229 Walnut Street
Cincinnati 2, Ohio



SUPER WIRE IMBEDDER
Finger-tip heat control
Price, $11.50 Wt. 3½ lbs.
Also a 6-32 v DC model at $8.50
R. P. Easton
1227 Cornell Ave., Hillcrest,
Binghamton, New York.



CARPENTER'S
ELECTRIC IMBEDDER
U.S. Pat. No. 2383708

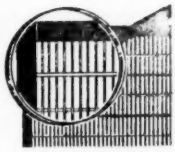


"BETTER BEE-HAVIOR"
A simple, speedy, and accurate device, operating on 110 volts A.C., which embeds and centers four wires in one operation. Proper gauges prevent hot wires from cutting through foundation.
Price—$8.25, postage prepaid. Shp. wt. 5½ lbs. For immediate delivery. Also models for shallow and wintering frames. Write for information on other models. Territory open for dealers.

B & C SALES CO.
Box 368 Riverside 3, Calif.

Protect your future. Buy your extra Savings Bonds Now.

THE ONLY WORTHWHILE
QUEEN EXCLUDER
on the market



Chrysler's All Steel Electric Welded Queen Excluder allows maximum bee passage, better ventilation, more honey production. No wood, no sharp edges to injure bees, no burr combs. New rust proofing process. So durably made and accurately spaced that it is permanently Queen excluding and will last a lifetime. Sales increasing steadily each year. For earliest delivery place your order at once. Send for circular E-2.

W. A. CHRYSLER & SON
Chatham - Ontario - Canada

XUM

Root Service from Chicago

In Nineteen Forty-Eight

Plan ahead. Order early the supplies you will need. We will try to have them for you.

Beekeepers' Supplies

Root Quality. The best hives, supers, frames, sections, foundation, all equipment, bees and literature.

Honey Containers

Glass and Tin—Best makes jars, cans, pails, all standard sizes.

Beeswax

Good Average and Light Yellow. We want it—highest market prices—cash or trade.

Ask for our bee supply price list. Ask for our container price list.

A. I. Root Co. of Chicago
224-230 West Huron Street
CHICAGO 10, ILLINOIS

SERVICE from SYRACUSE

ROOT "QUALITY" BEEKEEPERS' SUPPLIES:

Materials are still scarce. Order your bee supplies now, or send us list of your requirements. We will advise you and quote prices when available.

HONEY CONTAINERS:

Complete stocks at all times —standard honey jars, tin cans, and pails.

BEESWAX:

With new equipment for rendering old combs and cappings, we get all the wax there is—at reasonable rates. Highest market prices paid for wax. — cash or trade. Shipping tags sent on request.

A. I. Root Co. of Syracuse
1112-14 Erie Blvd., East
Syracuse 3, N. Y.
Serves You Best

The Old Reliable 3-Banded Italian Queens That Get the Job Done

Also pure Caucasian Queens and Caucasian Queens mated to Italian Drones. All daughters of carefully selected heavy producing queens mated to drones of equal quality.

	PRICES		
	1-24	25-49	50-100
Queens, each	$1.40	$1.30	$1.20

We solicit your order large or small. Prompt shipment and live delivery guaranteed. We furnish health certificate.

Pine Bluff Bee Farms, Rt. 3, Pine Bluff, Ark.

the Hubbard APIARIES

WRITE FOR FREE CATALOG

Quality Bee Supplies Factory Prices
Prompt Shipment from Stock
Satisfaction Guaranteed

THE HUBBARD APIARIES

Manufacturers of Bee Supplies
ONSTED, MICHIGAN

New England's S. O. S.

This service of supply — established in 1906 by A. W. YATES, is located for motorists on Route U.S. 5, just two blocks north of Goodwin Park. As carload dealers in Root Beekeepers' Supplies and Hazel-Atlas Honey Jars, we offer a **twenty-four hour mail order** or motor transportation service to all sections of New England.

Lotz Sections

"The Best Money Can Buy"

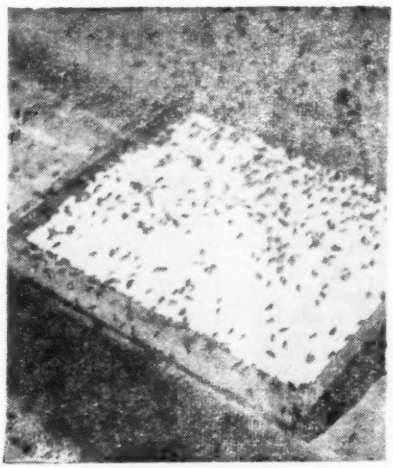
Get your order in early for our high grade sections — made of smooth, clear basswood lumber. The dimensions are accurate, and the workmanship of the best. A high glossy polish, smooth dovetails, and oval V-grooves are additional features of our sections. Furnished in the Mill Run Grade, split or unsplit, in either Plain or Beeway styles.

ALSO
A complete line of
FOUNDATION
WOODEN WARE
ACCESSORIES

August Lotz Company
Manufacturers and Jobbers
Boyd Wisconsin

Write for prices

Protect your future. Buy your extra Savings Bonds Now.



Picture taken on March 2, 1946, at Crawfordsville, Indiana, by Harry Starnes, showing bees wildly working on dry pollen substitute.

Pollen Substitute

Right now is the time to order your pollen substitutes. Bees will start using this now in the southern states and will start using it in the northern states by late February.

POLLEN SUBSTITUTE IS SO EASY TO FEED. Simply mix the two flours and place in a tub, hive cover, or any shallow container near the hives any day that the bees are flying.

By feeding pollen substitute your bees will build up faster and be in all around better shape. Figure 5 pounds of substitute per colony. The regular mixture used is one part of yeast to 5 parts of soy flour.

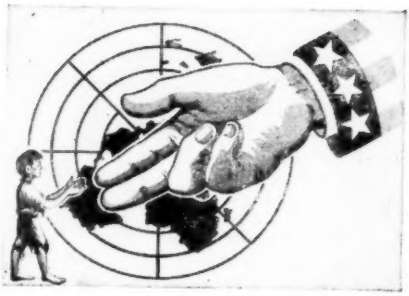
		Wt.	
25 lb. bag	Soy flour,	27 lbs.,	$3.00
100 lb. bag	Soy flour,	103 lbs.,	7.95
5 lb. bag	Yeast,	6 lbs.,	1.50
25 lb. bag	Yeast,	27 lbs.,	5.00
100 lb. bag	Yeast,	103 lbs.,	15.00

All prices F.O.B Paducah

Walter T. Kelley Co., Box 210, Paducah, Ky.

Give Them This Day

Help 230,000,000 children of the world to survive hunger and privation.....contribute to this world-wide action for the suffering children of today — tomorrow's citizens.....support the United States government foreign aid policy.....build the Children's Century, the peace that can march forward on the feet of little children.....GIVE THEM THIS DAY the American way, through American Overseas Aid—United Nations Appeal for Children, 39 Broadway, New York 6, N. Y.



Contents

FEBRUARY, 1948

Producing Package Bees and Queens—R. C. Daniels	65 - 69
We Visit England and Scotland—John G. Jessup	70 - 71
Nosema Losses in Package Bees as Related to Queen Supersedure and Honey Yields—C. L. Farrar	72 - 75
Research on Bees and Wild Pollinating Insects	76 - 77
Comparing Notes on Wintering—C. H. Pease	78 - 80
Annotations—Prof. A. Z. Abushady	81
Let's Have a Party—Mrs. Benj. Nielsen	82
Live and Learn—Propolis Pete	83
A Talk to Beekeepers—M. J. Deyell	84 - 85
Second Glances—C. M. Isaacson	86
American Honey Institute News Notes—Mrs. Harriett M. Grace	87
Just News	88 - 89
From North, East, West, and South	90 - 96
A. I. Root Gets a $20 Queen	96
Editorials	97 - 99
80 Years Among the Bees—E. R. Root	100
Honey Market	101
Asked and Answered	102

Subscription Rates:—United States, Canada, Pan-American countries, and Spain, one year, $2.00; two years for $3.00; three years for $4.00. Single copy, 15c. Other countries, 25c per year additional for postage. Discontinuance:—Subscription stopped on expiration. No subscriber will be run into debt by us for this journal. Change of address:—Give your old address as well as the new and write the name to which the journal has heretofore been addressed. Remittance should be made by post office money order, bank draft, express money order, or check. Contributions to Gleanings columns solicited; stamps should be enclosed to insure return to author of manuscript if not printed. Advertising Rates:—Advertising rates and conditions will be sent on request. Results from advertising in this journal are remarkably satisfactory. Advertisers' reliability:—While the publishers do not guarantee advertisements in this journal, they use utmost diligence to establish in advance the reliability of every advertiser using space in this journal.

The A. I. Root Company, Publishers, Medina, Ohio.
E. R. Root and M. J. Deyell, Editors; M. W. Hobart, Assistant Editor; H. H. Root, Associate Editor.